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THESIS

A CASE STUDY ANALYSIS
OF A SYSTEM ACQUISITION BY A FIELD ACTIVITY

by

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June 1980

Thesis Advisor: D. V. Lamm

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The formulation and execution of an acquisition strategy is a vital facet of the Government's process of acquiring goods and services. In this analysis, the researcher evaluates the strategy used by the Naval Supply Center Oakland to acquire the Naval Integrated Storage and Retrieval System (NISTARS), an automated inventory control warehousing system. The technical scope, project cost and system procurement technique used for

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A Case Study Analysis of a System Acquisition by a Field Activity

by

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requirements for the degree of

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I. INTRODUCTION

A. GENERAL

The concept of an acquisition strategy is important to the process of acquiring goods and services by the Federal Government. In buying "off-the-shelf" items from vendors or suppliers, the strategy is rather simple and straightforward and consists generally of insuring that competition is obtained and that the item meets the specific needs of the purchasing organization. The acquisition strategy for a major system, however, can become rather involved and complex, can be projected over a period of several years, and can require participation by several major organizations and functional disciplines.

This thesis has been undertaken in order to evaluate the acquisition strategy developed and executed for the Naval Integrated Storage Tracking and Retrieval System (NISTARS). NISTARS, as will be discussed in detail later, is a mechanized material handling system which ultimately will provide service to various major Naval Supply Centers and geographically contiguous Naval installations. For example, the industrial Naval Air Station (NAS) Alameda and the Naval Supply Center (NSC) Oakland are two activities which are located in close geographical proximity. The two facilities exhibit the following common characteristics: [12:7]

1) Both perform large wholesale supply functions.

2) They each stock 25,000 items common to both stock points.

3) Both are presently operating in warehouses of essentially World War II design.

4) Both can make significant improvements in productivity through mechanization.

5) The machinery used is obsolescent as neither activity has had a substantial capital improvement in the last 15 years.

Given the geographical proximity and functional redundancy between NSC Oakland and NAS Alameda, it is reasonable to question the feasibility and desirability of administratively combining these two activities. A multitude of studies has been conducted regarding this issue. Two current and significant studies include the Department of Defense Material Distribution Study (DODMDS) and the Shore Establishment Realignment Study (SER). Two major DODMDS findings and recommendations were: [12:8]

1) Further investment in improved systems probably could save money across the distribution system.

2) The management and administration of the Navy distribution facilities in the Oakland area (i.e., NAS Alameda and NSC Oakland) should be merged.

This latter recommendation was a factor in the Navy's decision to study the issue of wholesale supply consolidation [17:14].

In April of 1978, the Chief of Naval Operations directed that consolidation be studied as a part of the Shore Establishment Realignment (SER V) study [12:9]. The resulting SER report indicated that "consolidation was feasible and cost

effective given proper investment funding" [32]. If consolidation did in fact occur, then the NSC would experience a significant increase in material storage and movement problems. As was previously cited, the NSC had not experienced a recent significant material improvement; however, the proposed activity merger provided an environmental impetus from which to justify and acquire state-of-the-art modernization.

B. THE SYSTEM

The Naval Integrated Storage Tracking and Retrieval System (NISTARS) is a mechanized material handling system. This state-of-the-art multi-million dollar project contains provisions for an installation at NSC Norfolk and NSC San Diego, in addition to NSC Oakland. "NISTARS will control all warehouse functions including receiving, storing, issuing, consolidation of parcel post shipping and other inventory management procedures" [18:2]. The specific material handling equipment will vary in response to the unique requirements of each site; however, a significant degree of standardization will exist at each installation. The NSC Oakland NISTARS will serve as a prototype even though the automatic warehousing concept does have the following predecessors:

1) The Automated Storage Kitting and Retrieval System (ASKARS) was procured by the Naval Regional Procurement Office, Long Beach for four Naval Air Rework Facility (NARF) sites, one of which is NARF Alameda.

2) The Depot Integrated Storage and Retrieval System (DISTARS) was procured for the Defense General Supply Center, Richmond, Virginia, by the Defense Construction Supply Center.

3) The Warehouse Information Control System (WICS) was procured by the Air Force for the Warner Robins Air Force Base.

The previously cited systems are appropriately classified as being forerunners to NISTARS because they are similar in function, but less sophisticated in applied technology and scope than NISTARS.

Presently (Spring 1980) NSC Oakland is attempting to acquire the NISTARS automated material handling system. Interviewees have indicated that this acquisition is unique for the Oakland field purchasing activity for the following reasons:

1) The project contracting officer (PCO) affirmed that the projected total project dollar threshold ($40+ million) greatly exceeds that of a normally encountered transaction (e.g., the previous highest dollar single procurement action was $7 million).

2) NSC Oakland is buying the system for two other supply activities, each of which has their own purchase departments.

3) The acquisition is under the centralized management of the Naval Supply System Command Headquarters (NSSC).

4) Project officers were appointed by and work directly for the NSSC.

C. PURPOSE

The purpose of this case study is as follows:

1) Analyze the NISTARS project from an acquisition and contract management point of view.

2) Infer acquisition lessons learned to be applied in future similar acquisitions.

3) The insights obtained will be added to the existing body of knowledge regarding acquisition strategy.

D. RESEARCH QUESTION

The research question for the case study is: "What significant lessons can be learned from an analysis of a major acquisition by a field purchasing activity?" The following ancillary issues will be addressed:

1) What is an acquisition strategy and how is it formulated and executed?

2) What was the acquisition strategy for the NISTARS project?

3) What problems were associated with the implementation of the NISTARS acquisition strategy and how were they overcome?

4) What lessons were learned from the NISTARS acquisition?

E. SCOPE AND LIMITATIONS

This analysis and subsequent observation iteration will be conducted in a spirit of sensitivity to the fact that the NISTARS acquisition is still in the pre-award stage. Accordingly, an overt effort will be made not to prejudice the acquisition. The terms and conditions of the NISTARS solicitation stipulate that the contractor will have over two years after award to complete performance, ergo the scope of this study will not address all aspects of contracting officer and contractor effort.

F. METHODOLOGY

Primary research material was collected by interviewing key project persons in addition to an evaluation of the documented project plans and strategy. The project persons interviewed

represented the following functional areas: project office, purchasing, engineering, operations research, comptroller and automatic data processing.

Secondary research material was obtained via a comprehensive search of the literature base for applicable studies and relevant reference material. Specifically, information was obtained from the library of the Naval Postgraduate School (NPS) in addition to material from the personal libraries of NPS professors D. V. Lamm and A. W. McMasters.

G. ORGANIZATION OF THE STUDY

This thesis is organized in the following format. Chapter I discusses the NSC Oakland and NAS Alameda warehouse environment and the general nature of the automated warehousing NISTARS project. Chapter II discusses significant traditional acquisition strategy concepts and issues such as competition, relevant factors in selecting an appropriate form of contractual instrument, multi-year funding, project management, and life cycle cost analysis. Chapter III is a background chapter in which the traditional acquisition strategy precepts delineated in Chapter II are contrasted with the explicit realities of the NISTARS acquisition. Issues such as the following will be addressed:

1) What lessons were learned from past automatic warehousing acquisitions?

2) The NISTARS project manager was not in residence at NSC Oakland, and the impact of this factor will be addressed.

3) How did NSC Oakland attempt to obtain competition?

4) Why were performance specifications utilized?

5) Would a life cycle cost analysis have been applicable for the NISTARS acquisition and how could it have been executed?

Finally, Chapter IV contains the lessons learned, conclusions and recommendations from the case study analysis.

H. CONSTRAINT

Originally, when this case study analysis was undertaken, a contract for NISTARS was programmed to be awarded in April 1980. If the project had remained on schedule, then this researcher would have had the opportunity to contrast the Government's anticipated or desired acquisition strategy result with that which was actually attained. Presently, the NISTARS contract is projected to be awarded at the end of calendar year 1980; accordingly, the window from which this researcher can infer and articulate lessons learned has been abbreviated.

I. ASSUMPTION

It is assumed that the reader has a general knowledge of the principles and fundamentals of acquisition and contracting.

II. FRAMEWORK

A. ACQUISITION STRATEGY

What is an acquisition strategy? What factors are contained in an acquisition strategy? These simply expressed questions are not simply answered. The ambiguity associated with the acquisition strategy issue is evidenced by the research results presented in a thesis titled, "Acquisition Strategy: Concept and Definition" [4:11]. The authors concluded that what information could be found regarding acquisition strategy (by literature search and interview) pointed to it being a narrow, poorly defined concept. One could acquire a sensitivity for the significance of and parameters addressed by an acquisition strategy by a reading of the Office of Management and Budget Circular No. A-109 [25]. The Circular delineates factors such as the following which could be encompassed by an acquisition strategy: methods for obtaining and sustaining competition, methods for analyzing and evaluating contractor risk, decisions on whom to solicit, guidelines for the evaluation, acceptance or rejection of proposals, selection of the type of contract best suited for the particular acquisition, need and desirability for contractor incentives, contract administration, and the relevance and application of life cycle or design to cost considerations. In an Office of Federal Procurement Policy (OFPP) printed

discussion of OMB Circular A-109 dated August 1976, the points are made that "the strategy" should form the basis for the manager's acquisition plan [25:11]. Given that a plan is in fact formulated, then the project manager has a medium from which to communicate with higher authority, his project team and the contractor. Additionally, the plan provides a means to measure accomplishment and evaluate contingencies. Finally, the OFPP pamphlet categorizes a plan as being potentially dynamic; that is to say that the strategy should be continually reviewed, refined and updated as appropriate.

In an effort to establish a framework with which selected NISTARS project parameters can be contrasted, a detailed discussion of the relevant previously cited acquisition strategy factors follows.

What is competition? One definition is "an environment of varying dimensions relating to buy-sell relationships in which the buyer induces, stimulates or relies on conditions in the marketplace that cause independent sellers to contend confidently for the award of a contract" [1:1A-B3]. The concept of competition is of paramount importance as it is firmly entrenched in procurement law and policy. Public law dictates that the Government is required (emphasis added) to acquire goods, services and facilities of the requisite quality within the time needed at the lowest reasonable price utilizing competitive procurement methods to the maximum extent possible [28]. There are a number of reasons in

addition to legal mandate as to why competition is such a dominant factor in acquisition. One is the principle that all qualified sellers should have the opportunity to vie for Government business on an equal basis with fellow competitors. In other words, a contractor should receive an award because his contract was perceived as being most advantageous to the Government, not because he received a most favored status. Government acquisition is performed in a fish bowl; accordingly, all actions must be conducted in an atmosphere of fairness so as to be able to withstand intense public scrutiny. The use of competition in the impartial environment of the marketplace is a way to eliminate bias or the appearance of a rigged award. The Supreme Court has reinforced the precept of promoting fairness with its finding that: [34]

> It is better that an individual should occasionally suffer from the mistakes of public officers or agents than to adopt a rule which, through improper combinations or collusion, might be turned to the detriment and injury of the public.

Other reasons that competition is desirable are that it may stimulate technical innovation, reduce risks or costs and induce effective management. Competition is one of the most important considerations in the formulation of an acquisition strategy. If competition is effectively planned and properly executed, then the project manager may be able to eliminate or control problems in the critical areas of contract performance, schedule and cost.

In an effort to fairly present the competition argument, the following potential negative effects are cited.

J. Ronald Fox in his book, Arming America, presented four factors which could render competitive procurement as being less desirable than single source procurement [13:257]. First, competition requires more time and effort than a single source procurement. Efforts such as writing statements of work and requests for proposals, evaluation, and "best" contractor selection can be rigorous, time-consuming evolutions. Second, Fox states that, "Competition increases the likelihood of protests and disputes." Third, Fox states that, "Competition frequently disrupts long established relationships between Government and industry personnel who have previously worked together on the procurement of a particular item." Fourth, Fox indicates that, with competition, "The Government buying organization must evaluate the producer's quality and capability of competing contractors." The selection of a new, lower cost source could result in quality problems which could impair or preclude performance and which would have to be justified to the upper echelons [13:257].

Given that competition is a generally desired, frequently required acquisition parameter, then how is it attained? A wide solicitation from a multitude of potentially qualified sources may spark contractor interest and, hence, competition. Additionally, for advertized acquisitions, [15:1]

> Competition can be increased and made a more useful device by using functional purchase (performance oriented) descriptions to elicit total product competition rather than the narrow initial price competition associated with the use of formal Government specifications.

A performance specification delineates the Government's requirement in terms such as function, capacity or operation. The explicit structure of the product is primarily left as an option for the contractor. The quoted allegations that the use of performance specification could increase competition was made by Robert Judson, then Executive Director of the Navy Center for Acquisition Research, in a paper that he drafted on the subject [Ref. 15]. Mr. Judson cited a 1967 Comptroller General decision to give credibility to his affirmation. The essence of the decision was that "performance oriented specifications" in addition to protecting the Government's interest ensure that all manufacturers have an opportunity to compete for Government purchases [8]. The use of performance specifications to increase competition is an issue that has surfaced in other acquisition legislation. The proposed 1979 Federal Acquisition Reform Act, commonly referred to as the "Chiles Bill" stipulated that, "To the maximum extent practicable and consistent with the needs of the agency, functional specifications shall be used to permit a variety of distinct products or services to qualify and to encourage effective competition" [30:14].

Given that competition has in fact been promoted and obtained, then how are the offerors evaluated to select the eventual supplier?

In competitive negotiations, the delineation of a competitive range is used to narrow the field of offerors.

A contracting officer is required to hold discussions with all offerors in the competitive range in the following circumstances: [31:104]

> In all negotiated procurements in excess of $10,000, in which rates or prices are not fixed by law or regulation and in which time of delivery will permit, proposals, including price, shall be solicited from the maximum number of qualified sources consistent with the nature and requirements of the supplies or services to be procured, and written or oral discussions shall be conducted with all responsible offerors who submit proposals within a competitive range, price and other factors considered.

The contracting officer must make value judgments as "competitive range constraints" and "maximum number of participants" concepts are not explicitly defined. Any offeror who has been determined to be outside the competitive range is excluded from further consideration in the acquisition. This exclusion can occur any time prior to the completion of negotiations with the successful offerors. Conversely, having a multitude of potential offerors within the competitive range can cause the contracting officer a coordination concern as all these aspiring offerors must be included in discussions and negotiations leading to source selection. The opportunity for a number of simultaneous multi-offeror negotiation sessions exists.

What are the contracting officer's primary considerations in establishing a competitive range? In proposal evaluation,

> Consideration is given to cost or price issues, technical capability and capacity, in addition to any relevant criteria which may be particularly important in determining whether or not the offeror has a reasonable opportunity for being selected for the final award. [31:105].

The contracting officer's paramount concern is to select a proposal which affords the Government the greatest advantage in terms of price and other factors. One factor that can significantly affect the number of offerors, hence the degree of competition, is the perceived risk associated with an acquisition. The magnitude and potential impact of inferred risk are functions of the entity evaluating the acquisition. Technical competence, experience, capacity, commitment to other actions, organizational essence, and financial posture are some of the considerations which are unique to an organization. If potential offerors are to be enticed into the acquisition arena, then the Government needs a medium to share and minimize vulnerability to risk and to promote fair and reasonable treatment. Selection of the appropriate type of contractual instrument can facilitate the previously cited goals. An analysis of the types, parameters and applicability of a variety of contractual forms follows.

B. CONTRACTS

Contracts are usually classified as a function of the type of pricing provisions they contain and generally fall into one of the following two basic categories: cost reimbursement contracts and fixed-price contracts. These two basic types of contracts differ in the risks assumed by the parties for performance costs and the type and amount of incentives offered to the contractor. Within the firm-fixed-price and cost reimbursement general categories, there are

a number of specific contract adaptations to make the instrument amenable for the given acquisition situation. Two basic considerations in selecting a contract type are to obtain an equitable agreement for both contractual parties while simultaneously promoting the best interests of the Government. What are some of the pertinent constraints that must be considered in selecting the proper type of contract for a particular acquisition? Several factors will be presented that could be considered so as to convey a flavor for the process. Proper allocation of and subsequent fair and reasonable compensation for risk are paramount considerations in an acquisition. The following potential risk factors could be scrutinized: [3:121]

1) The complexity of the goods or services solicited.
2) The perceived duration of the contract and any associated production runs.
3) Past experience and reputation of the contractor.
4) The technical capacity and financial responsibility of the contractor.
5) The accuracy with which the performance costs can be estimated.
6) The potential for and possible magnitude of subcontracting.

Additional factors that could be analyzed include: [3:121]

1) The degree of competition.
2) The urgency of the need.
3) Associated administrative costs.
4) Business practices in the specific industry.

Given that some of the basic considerations have been articulated, it is now appropriate to dissect some specific contractual instruments. The Firm-Fixed-Price (FFP) contract is the Government preferred type of contract. In fact, when the acquisition is accomplished via the formally advertized method of procurement, the Government is required to use a Firm-Fixed-Price contract. It is an agreement by which the contractor consents to provide specific goods or services for an explicit price. The FFP contract could be used given the following circumstances: the requirement is for standard commercial items or military items where the specifications are fairly fixed; price competition exists; the contractor has production experience; and costs can be estimated with reasonable confidence [3:122]. If a fair and reasonable price can be established by either competition or price analysis, then the FFP contract should always be used. Use of the FFP contract affords a significant reduction in contract administration during performance; accordingly, Government administrative personnel can be utilized in other areas. The point is made that administrative responsibilities are diminished for the Government because under a FFP contract the seller has the maximum incentive to produce efficiently since he is bearing all the financial risk.

The Fixed Price Incentive (FPI) form of contract is a flexible instrument that can be designed so as to share the burden of risk and to reward exceptional commercial performance.

The parameters and process for using the FPI contract are as follows: The contractural parties negotiate a target cost, a target profit, a ceiling price and a formula termed a "share ratio." When the goods or services solicited by the buyer have been obtained, then the final costs are negotiated and the final contract price is determined via the share ratio. If the final costs are less than the target cost, then the contractor can share in the cost savings and receive a profit in excess of the target profit. The inherent assumption of the FPI instrument is that having the ability to enhance profit could or does induce the contractor to reduce costs, produce a better product and expedite production. It is important to note that the share ratio works two ways. That is to say, if the final contract cost exceeds the target cost, then via the share ratio, the contractor's profit is reduced below the target profit. If the final contract cost exceeds the ceiling price, then the contractor could find himself in the position of having worked for a net loss. The share ratio percentage values are flexible at the time of negotiation as the parties may negotiate one formula for below target cost and a different formula for above target cost. The essence of the FPI contract is that the contractor by his management skills (or lack thereof) has an opportunity to directly influence his profit.

The advent of high technology initially contributed and continues to reinforce the use of cost reimbursement contracts.

This is because the Government desires to field the best possible weapon systems; accordingly, state-of-the-art complex acquisitions result. High technology is associated with high risk; accordingly, a contractor is reluctant or perhaps strongly opposed to accepting a fixed-price contract. Some salient features of cost-type contracts are the following: [16:120]

1) The buyer assumes nearly all the financial risk.

2) It is generally correct to state that a seller does not have to achieve performance to be reimbursed.

3) The Government does retain the caveat that only allowable costs--to a predetermined figure--will be paid.

A primary disadvantage to the buyer with this general type of instrument is that the seller has little effective incentive to control costs. Another buyer disadvantage associated with the cost type contract concerns the fact that these instruments are particularly expensive to administer. Costs that are allowable must be agreed upon in advance and then they must be audited to affirm validity. A related problem to this issue is the fact that for the Government to have the capability to effectively audit the contractual costs, the seller must have an accounting system that separates and assigns costs to a specific cost contract. Since the buyer and seller may not always agree as to the allowability of particular costs, the opportunity for extended discussions or litigation exists.

At this point, development of a relevant (for the NISTARS acquisition) form of cost contract is appropriate. The Cost-Plus-Incentive-Fee (CPIF) type of contract is an adaptation of the FPI instrument. Before the parameters of the CPIF are delineated, two basic differences from the FPI contract will be highlighted. First, the CPIF contract does not have a ceiling price. Second, the maximum fee that a contractor can receive is subject to Defense Acquisition Regulations (DAR) limitations. The CPIF instrument attempts to provide a mechanism to reward the efficient performer. The features of the CPIF contract are as follows: A target cost is negotiated (this task is of utmost importance as the potential success of the incentive provision is a direct function of the target cost validity). Since risk and uncertainty are prevalent factors, it is particularly difficult to estimate a target cost that has an equal probability of either an overrun or an underrun. Given that the parties negotiate an acceptable target cost, then the next features to develop are the maximum and minimum fees and the share ratios. The maximum fee may be constrained by a legal ceiling. Minimum fee could range from zero to a guaranteed minimum. If the minimum fee is in fact zero, then the contractor is truly sharing in the contract cost because in the case of an overrun he could be faced with net losses.

It is important to note that if a maximum and minimum fee are negotiated, then these are the points where contractor

sharing ceases and the contract becomes essentially a Cost-Plus-Fixed-Fee (CPFF) contract. This differs from the FPI contract which has a ceiling price, and in the event of an overrun beyond ceiling price the Government ceases to share and the contract becomes firm fixed-price.

There are a variety of contractual instruments that could be adapted for a particular acquisition. The selection of the best form for the situation at hand is a vital facet of an acquisition strategy. The choice can directly affect the degree of competition, cost, schedule and performance characteristics.

C. PROJECT MANAGEMENT

A significant decision that must be made regarding the acquisition strategy for a major acquisition concerns the management of the effort. That is to say, will a project team be created or will the existing activity hierarchy assimilate the major acquisition as an extension of business as usual. The use of the concept of a project is as follows: "A combination of human and non-human resources pulled together in a temporary organization to achieve a specific purpose" [7:184]. Given that a "how-to-manage" decision must be made, then how does one decide when to use project techniques? Cleland and King cite a number of situations that could promote or reinforce a decision to use project techniques [7:198]. 1) Magnitude of the effort is one such criteria.

The issue of size is relative, however, if a particular effort mandates more resources (manpower/money/material) than are normally needed for an activity action; then project techniques may be warranted. 2) Unfamiliarity is another occurrence that could render the project organization as being desirable. An action that is other than routine is a prime candidate for a project classification. 3) Another factor to consider in the decision regarding the establishment of a project is the degree of interdependence existing between the tasks of the action. If the action necessitates the coordination and cooperation of many functionally separated activities, then the project technique could be beneficial. "Project techniques provide a logical approach to the organizational relationships and problems encountered in the integration of the work" [7:198].

The final circumstances that will be delineated that could promote a decision to use a project structure are as follows: [7:201]

1) High risks, and environmental factors such that an accurate prediction of the future is difficult,

2) Multiple objectives exist--the accomplishment of which requires that a multitude of people work together,

3) A Government procurement agency requires a project oriented approach.

If the decision is made to utilize the concept of project management, then some thought must be given as to how to organize the team. The project organization could be comprised

of functional personnel in addition to selected individuals assembled to accomplish the particular task. This form of structure is classified as being a matrix organization. Operational realization of the matrix organization can vary in format. The extremes include situations where the project manager has all project personnel working directly for him in a line capacity, to the opposite extreme in which the project manager serves in the capacity of facilitator or coordinator. Regardless of the structure, the essence of the relationship is that the project manager can accomplish few functions alone. Accordingly, he must work through people and manage the project interaction.

What components should be orchestrated to formulate an effective project organization? The effort will be facilitated by first assigning a competent project manager and then delegating to this person clear authority and responsibility [7:243]. The next phase is to assign to the project manager the necessary resources to accomplish the action. "To select the human resources requires that the overall project be divided into subtasks...until the project is represented by an alignment of rational, related, recognizable work units" [7:243]. This divisional action is best accomplished by the project manager working jointly with the functional managers who will be supporting the project. What functional groups or special tasks could/should be considered in the formulation of "the project team"? The project team could include

functional groups with responsibility for: [7:243]

1) Developing the general project requirements, e.g., formulating the overall project plan,

2) Preparation of the appropriate product specifications,

3) Establishing the system's reliability, maintainability and supportability requirements,

4) Negotiating and administering all project associated contracts,

5) Developing, coordinating project schedule and cost control criteria,

6) Planning for the installation and operation of the final product,

7) Identifying and developing the appropriate personnel skills necessary to use the final product.

D. LIFE CYCLE COSTING

Life cycle costing (LCC) is an analysis that could be incorporated into an acquisition strategy because its purpose is to obtain the best performance for the lowest total cost of ownership [14:I-1]. Additionally, LCC can be proficiently planned and executed via the project team mechanism just discussed. Before these points are developed, an identification of the essence of LCC is in order. The life cycle of an item begins with a feasibility study for its production and use. Development, production, utilization and ultimate last item disposal constitute the remaining facets of an asset's life cycle analysis [14:I-1]. "The life cycle cost of an item is the total cost incurred in the research, development, production, operation and disposal of an item" [14:I-1].

The total cost of ownership is that subset of the life cycle cost which is incurred by a using activity. A key issue is that tradeoffs like cost benefit analysis may support an optimum vice minimum life cycle cost.

If the concept of LCC is incorporated as part of the acquisition strategy, then a determination must be made regarding which cost categories are relevant for acquisition analysis. Potential LCC cost categories include source selection, acquisition, support, and disposal. The general "support" area can be divided into relevant subsets such as maintenance, inventory management, training, inspection and acceptance, transportation and operation [14:I-7]. The project management team establishment would facilitate the attainment and analysis of these cost category data as functional specialists exist within a matrix organization.

III. AN ANALYSIS OF THE NISTARS ACQUISITION

A. NISTARS ACQUISITION STRATEGY

The purpose of Chapter II was to establish the framework for the concept of acquisition strategy by a discussion of selected relevant topics. In this Chapter, those issues will be developed with a focus on the NISTARS program. What was the acquisition strategy for the NISTARS project? How was this strategy to be implemented? Before delineating the parameters of the acquisition strategy as it is documented in the NISTARS procurement plan, however, a discussion of some of the relevant factors influencing the NISTARS acquisition strategy formulation is warranted.

B. EXISTING WAREHOUSING SYSTEMS

NISTARS is an evolutionary extension of the Warehouse Information Process Control System (WICS), Depot Integrated Storage and Retrieval System (DISARS) and the Automated Storage Kitting and Retrieval System (ASKARS) automated warehousing systems previously cited. Before drafting the NISTARS acquisition strategy, the NSC Oakland purchasing department evaluated past automated warehousing acquisitions so as to infer and possibly incorporate lessons learned. In the case of the WICS acquisition, the negotiation process was used with the final result that a firm fixed-price (FFP) contract was awarded to the low offeror. Delivery of WICS was

significantly delayed because of constructive changes, specification changes, and production problems. Additionally, acceptance was based upon a simulated test and at the time of the formulation of the NISTARS acquisition plan, WICS had failed to meet the desired throughput requirement. Under DISARS, the acquisition was started as a two-step formally advertised firm-fixed-price procurement. Two of the forty-four firms solicited responded. One of the responding firms eventually dropped out allegedly because of an adverse perception of the project's financial risk. The acquisition was negotiated on a sole source basis. The ASKARS system was begun initially as a two-step formally advertised procurement; however, the receipt of only one proposal resulted in a conversion of the advertised solicitation into a negotiation. Interestingly, the same contractor was awarded the WICS, ASKARS and DISARS contracts.

Analysis of these past acquisitions by the NSC Oakland Purchasing Department established the following: [18]

1. There is a paucity of firms that are either capable of performance or desire to undertake a Government automatic warehousing project.

2. The financial risk associated with the project was perceived by some potential offerors as being significant enough to preclude their seeking the award.

3. Financial risk in the guise of cost escalation is a potentially significant factor that must be planned for.

4. Both ASKARS and DISARS used a detailed design specification with performance parameters. Since a significant portion of the Department of Defense's automated warehouse knowledge comes from these systems, use of a design specification would favor a particular prior sole source contractor. Accordingly, it was anticipated that the use of a performance specification would stimulate competition and subsequently a broader-based effort to develop a technically innovative approach.

5. The development cost associated with an integrated process controlled warehousing system is substantial; accordingly, providing a large base over which to distribute these costs could facilitate attaining competition.

6. The ASKARS/DISARS sole source contractor had already recouped some development costs, ergo he was in a position to underbid potential competitors. A multiple site and multi-year funding approach was envisioned by NSC Oakland as mediums to expand the base and thereby promote competition.

7. A number of firms had exhibited tendencies ranging from a general reluctance to a blatant refusal to bid on Government contracts because under formal advertising the award would be made solely on the basis of price. Accordingly, NSC Oakland desired to develop a source selection plan in which technical factors, in addition to price, could be considered.

C. ACQUISITION ALTERNATIVES

The NSC Oakland Purchasing Department considered the following three alternatives as possible approaches for the NISTARS acquisition: [18]

1) Sole source performance specification procurement of the NISTARS system from the DISARS and ASKARS contractor.

2) Competitively buying the hardware and then buying the software and system integration from the DISARS and ASKARS sole source contractor.

3) Competitively buying the NISTARS system using a two-phased procurement with a delayed submission of pricing proposals.

The first alternative was rejected by NSC Oakland because of their inability to justify a non-competitive sole source NISTARS acquisition. Their rejection rationale was as follows. The DISARS and ASKARS contractor has a limited capacity to manufacture material handling equipment and process controllers; accordingly, NISTARS contractual performance would involve a significant subcontracting effort. A competitive market exists for these standard commercial items which are projected to constitute 60 - 75 percent of the system cost [18]. In view of these latter facts, a hardware component breakout with some sole source procurement was deemed by NSC Oakland to be a more desirable acquisition approach. This second alternative could result in coordination problems and an elevated cost risk. These potential adverse features were traded off initially by the fact that the Government's goal to strive for competition was served and this fact could promote a favorable source selection scrutiny by higher authority. Alternative number two ultimately was rejected for the following reasons: [18]

1. The anticipated significant increase in the number of in-house resources needed to manage such a project,

2. The perceived increases in program risk,

3. The rationale for software and integration sole source procurement was viewed as being weak, given that the necessary knowledge and technology were available to other firms.

The third alternative of competively buying the NISTARS using a two-phase procurement with a delayed submission of pricing was the selected medium to effect the acquisition. It was envisioned that this method would best withstand high level review in addition to promoting system competition as the element of sole source bias was eliminated on the front end of the acquisition. A lack of response to the RFP by acceptable offerors could result in NISTARS being acquired from the prior sole source contractor; however, it was perceived that this potential occurrence would be the result of factors other than, or in addition to, the NSC acquisition strategy.

The three acquisition alternatives just discussed are documented in the NSC Oakland NISTARS Procurement Plan [18]. This researcher suggests that one of the following alternatives could have been considered to acquire NISTARS. Contract-out the development of the NISTARS design specifications and once the Government possesses this definitive quantification of the need, the formal advertising (FA) method of acquisition could be utilized. This approach has two significant laudable characteristics. First, the Government's acquisition tenant of soliciting competition is satisfied. Second, the designer of the specifications could be made to bear any cost burden attributed to ineffectual specifications. A modification of

this acquisition alternative is the following. First, contract-out for the development of the NISTARS design specifications and then, given the specifications, the hardware could be competitively acquired by the Government and provided as Government Furnished Equipment (GFE) to the NISTARS integrating contractor. If the Government did not desire to have the risks and responsibilities associated with GFE, then a second strategy alternative could be executed. The NSC Oakland Purchasing Department broadly classified the project's risk components into two main categories: risks attendant to the material handling equipment and risks attendant to software development and system integration. The material handling equipment was perceived as being standard commercial, and readily available. Therefore, a firm-fixed-price contractual instrument could be used to effect the acquisition of the hardware requirements mandated by the contracted-out design specifications. NSC Oakland attributed significant cost and technical risk to both the software development and the system integration efforts. Therefore, a cost reimbursement contractual instrument could be adapted to consummate this facet of the NISTARS acquisition. This approach could involve more front-end and project duration administrative effort by the procurement staff, but it is suggested that the project's risk components would be more directly addressed which in turn could induce or sustain multiple contractor pre-award involvement.

In the NISTARS RFP, the FPI (firm target) type of contract was cited as the "anticipated" result to the solicitation. In an effort to be perceived as reasonable and not to dissuade any potential offerors from competing, NSC Oakland qualified their documented anticipation with the statement that "the final selection of a contract type will be based on negotiations and the logic of the individual situation" (19:15). Additionally, offerors were encouraged to submit their plans and rationale for alternative contractual formats. In order to provide a common basis for evaluation and award, NSC Oakland articulated the cost sharing ratios and ceiling price to be used by the offerors in phase two (price proposals). The FPI firm target common basic parameters were 85/15 above target, 60/40 below target and a ceiling of 130%. Two divergent opinions emerged regarding the level, purpose and potential result of the below target numbers. The NSC Oakland NISTARS acquisition team believed that a 60/40 below target ratio was both fair and necessary to compensate contractor risk and to promote competition since they perceived a substantial cost risk for a new firm (other than the prior sole source contractor) to develop the NISTARS software and to subsequently integrate it into the NISTARS system. Higher authority had a different perception as to the possible impact of a 60/40 below target share ratio. Their primary concern was that the 60/40 ratio was so much of an incentive to come in under target price that the following adverse effects could result:

1. The contractor might cut corners and compromise quality to maximize his monetary return.

2. The NISTARS contract could become an extreme administrative burden because the contractor might attempt to either change the targets or change the contract scope in an effort to generate and preserve a high below-target windfall. An appendix to the RFP established the fact that the below-target share ratio was changed to be 85/15.

This researcher suggests that there are other types of contracts besides the FPI firm target that could be applicable for the NISTARS acquisition. Before developing the contractual alternatives, the following brief statement of some of the environmental constraints is provided [18].

1. The NISTARS Project has a firm performance requirement.

2. The Government has a high expectation of technical success.

3. The cost risk associated with software development and system integration is substantial, particularly for a new firm entering the field.

4. FFP contracts had previously been used to acquire automated warehousing systems from a sole source contractor. NSC Oakland's perception was that an overt attempt on their part to contract NISTARS with a FFP instrument could result in reduced competition.

5. Present economic conditions are such that the cost of money to contractors and general financial uncertainty are particularly high.

6. A contractor induced schedule slippage can result in $3000 per day in damages.

D. POTENTIAL NISTARS CONTRACTUAL FORMATS

In a FFP contract the price is agreed upon before the award of a definitive contract. As the name implies, the price remains firm unless the contractual parameters are

changed in accordance with the provisos of the Changes Clause or any bilaterally agreed to change. A major consideration associated with this type of contract is that the contractor assumes full cost responsibility. Given the NISTARS environmental constraints previously cited, coupled with the Government's desire to obtain competition, this researcher suggests that the FFP contract would not be the optimal instrument if NISTARS is to be acquired with one contract. As was previously discussed, a FFP contract could be appropriate for the hardware break-out since there is a perceived minimal cost risk exposure associated with this portion of the NISTARS acquisition.

A cost-plus-fixed-fee (CPFF) contract could be used for the NISTARS procurement; however this researcher suggests that it also is not the optimal form of contract because: (1) the Government bears all the risk, (2) the contractor is not incentivized to improve performance and reduce costs, (3) the contractor's fee is fixed even if actual costs greatly exceed original estimates, and (4) the Government may find it necessary to allocate more time and resources to administer contract performance (since the contractor has no risk or cost reduction incentive).

If the contractual parties believe that the cost uncertainties associated with performance are so significant that a reasonable and mutually acceptable ceiling price cannot be negotiated, then a cost-plus-incentive-fee contract (CPIF) could be used for NISTARS. The NISTARS acquisition is comprised

of diverse risk components. As has previously been discussed, the material handling equipment elements of the acquisition were perceived to be relatively risk free (from the standpoint of cost escalation). The software development and system integration aspects of the project were anticipated to have a greater impact on schedule and performance and less influence on cost escalation. The United States economy is particularly dynamic during the mid-1980 timeframe; accordingly contractors were reluctant to accept a contract that would have the effect of financially binding them. A relevant sideline point is that the NISTARS RFP has an economic price adjustment (labor and materials) provision which is intended to reduce the contractors' perceived potential "dynamic economy" financial vulnerability. This researcher is of the opinion that the CPIF contract is the best form of the cost reimbursement contracts that could be applied to the NISTARS acquisition. However, the FPI contract, as defined in the NISTARS RFP with its 130% ceiling, offers reasonable risk protection for both the Government and the contractor and incentives sufficient in scope to induce the contractors to a high level of performance. NSC Oakland's anticipation of concluding the solicitation with a FPI NISTARS contract is viewed by this researcher as being fair, reasonable and responsible to the environmental dynamics of the acquisition.

E. PROJECT RISK

The success or lack thereof of the selected strategy to competitively buy the NISTARS system on a multi-year basis via a two-phased procurement hinged on the ability of NSC Oakland to stimulate and obtain competition. The Purchasing Department realized that their goal to obtain competition could be enhanced if the industry perceived that their risks would be reasonably and responsibly addressed by the Government. The NISTARS Procurement Plan contains a section entitled "Risk Overview" in which the following points are made regarding the project's risk components. The NISTARS project requirements do not exceed the limits of existing technology; however, the necessary software will have to be developed as "ready-made" programs are not available. This factor was not anticipated to cause a significant problem since the software requirements were well within the current capability of the industry [18]. The following impact statement is included so as to put the NISTARS project magnitude in perspective.

> NISTARS goes beyond existing commercial and military systems in the areas of throughput and the number and complexity of items received and issued.

For example, the WICS requirement was 5,000 transactions per eight-hour day; DISARS was 8,000 and NISTARS was to be 18,000 [18].

The prospect that NISTARS might fail in attaining the required throughput was perceived as the project's major technical risk. The WICS project was studied by the NSC Oakland

NISTARS Acquisition Team so as to be able to discern what circumstances impaired the success of this effort. The following lesson influenced the formulation of the NISTARS acquisition strategy. The WICS process controller is core-limited and not susceptible to expansion. In an effort to ensure the realization of the required response times, the NISTARS specifications are demanding in this area to the extent that it is hoped that this potential problem will be averted. The WICS system utilizes order-picking vehicles which are linked to the process controller via wire guidance lines. A significant problem concerns the fact that data transmissions are frequently impaired because electromagnetic impulses in the line induce unscheduled process controller shutdowns. So as to eliminate this type of system vulnerability, the NISTARS solicitation requires that if the offerors propose the use of order-picking vehicles, then the communication must be accomplished by a medium other than wire guidance. The final point that will be made regarding the technical risk components concerns the acceptance procedure.

The WICS acceptance was conducted in the following fashion. It was based on a test in which contractor personnel operated a significant portion of the system that had been contractor-loaded with dummy material (empty boxes). Post-acceptance and under actual operational conditions, the WICS system has been unable to duplicate the desired 5,000 transaction throughput that was achieved during the simulated acceptance test.

Accordingly, NISTARS will be loaded with actual material by Navy operators six months prior to the acceptance testing. The acceptance test will be performed by Navy personnel using actual transactions in an effort to affirm that the required throughputs are in fact achieved and the real world performance shortfalls that the WICS acceptance format obscured are avoided.

At its inception NISTARS was planned as a separate acquisition action for the three selected project sites. Execution of this original plan would have contributed to an increase in the project's cost risk as there would have been redundant contractor development costs. So as to reduce the adverse impact of this facet of cost risk, a multi-site, single contractor award goal was included in the acquisition strategy. This method could eliminate repetitive concurrent expensive multi-contractor software development costs in addition to permitting a single contractor the opportunity to obtain quantity discounts. Additionally, the proposed use of multi-year contracting for the multi-site project provided another medium to reduce cost risk since multi-year contracting would also give the contractor the opportunity to place advance orders for the NISTARS hardware and thereby accrue trade discounts or an inflation hedge. As was mentioned earlier, the material handling equipment costs could constitute up to 75% of the total system cost, accordingly there would be an opportunity for significant savings. The drawback to multi-year contracting is that if the second year funding does not

materialize, then the cost of the cancellation ceiling will have to be absorbed.

The last risk factor that will be discussed addresses the possibility of schedule slippage. In fact, a timely delivery could be hampered by a basic NISTARS acquisition strategy tenant of obtaining wide competition since a new contractor would probably encounter development or implementation problems that had already been resolved by the previous automated warehousing system sole source contractor. The NISTARS project was initially justified and subsequently funded because of the projected manpower savings. A schedule slippage could impair or entirely preclude this anticipated NISTARS benefit. Additionally, late delivery of the project could precipitate management problems for the three Naval Supply Centers as it would be difficult to plan for and effect a timely, smooth and equitable transition from a labor intense operation to an automated process if an explicit operational date for NISTARS is not known.

The NSC Oakland NISTARS procurement plan contains the affirmation that the project acquisition strategy was designed to stimulate and obtain competition. "Utilizing past procurement history, the NISTARS procurement has been designed to attract competition" [NISTARS PCO]. Some of the actions that were planned to promote competition have been articulated; however, the discussion would not be complete unless the NISTARS pre-solicitation conference was mentioned.

F. PRE-SOLICITATION CONFERENCE

The 31 January 1979 conference had two purposes:

1) To give visibility to the imminent acquisition,

2) To give industry an opportunity to and a forum from which to provide an input on the specifications.

The specific date for the conference was given wide dissemination via individual letters sent to 28 prospective offerors whose names had been obtained by interrogating the NISTARS project office, the ASKARS and DISARS negotiators and the Thomas Register, as well as a notice published in the Commerce Business Daily concerning the pre-solicitation conference. Twenty-six firms attended the pre-solicitation conference. The agenda for the conference included a presentation of an overview of NISTARS and the proposed procurement plan by the NSC Director of Purchasing, the distribution of the proposed specification to the attendees, and an opening of the conference for general discussion. Some of the questions from potential offerors which surfaced during the discussion indicated that a number of firms had never transacted business with the Government or their business had always been conducted on a formally-advertised firm-fixed-price basis. This insight was valuable since a broad-based industry naivete regarding Government acquisition precepts or a general reluctance or fear to conduct business with the Government could preclude the attainment of competition. Accordingly, during the discussion, the Director of Purchasing made an overt effort to

resolve or at least mollify some of the ambiguity that some of the attendees alleged pervades Government acquisition. A review of the conference minutes established that the following points were made by the NSC Oakland Director of Purchasing. The fact that the NISTARS contractor would be selected utilizing formal source selection criteria was emphasized. The logic for using this method of source selection was explained by affirming that it produces an objective, well-documented evaluation of all proposals. The explicit parameters of the formal source selection process were clarified. The Source Selection Evaluation Board (SSEB) was identified as the entity that evaluated the technical aspects of the proposals. The fact that these individuals do not know the weights of the evaluation factors or the pricing data was emphasized. The Source Selection Advisory Council (SSAC) was presented as a group "that develops the weight for the raw data supplied to them by the SSEB, marries pricing information with the technical inputs and then provides ranked recommendations to the Source Selection Authority (SSA)." The SSA ultimately makes the decision as to which contractor wins the award. The NSC Director of Purchasing emphasized that the entire evaluation and selection process is an objective team effort [Appendix C].

The NISTARS request for proposals called for the initial submission of unpriced technical proposals. The rationale for this action was that during the pre-solicitation conference the contractors indicated a reluctance to expend resources in

the development of initial cost data when their proposal could be deemed unacceptable or project technical changes could render their initial pricing effort worthless. Given that performance specifications were used in the RFP, the likelihood of technical changes was perceived by the contractors as being significant. The fact that the NSC Oakland Purchasing Department felt that some of the logic expressed by the contractors was applicable to the Government is indicated by the PCO's statement that "Because of the time required for technical discussion, the initial prices could only be used as gross estimates." Additionally, NSC Oakland believed that it would be an unproductive endeavor for the Government and the offerors to attempt a reconciliation of the initial pricing and the final offers. The NSC Oakland Purchasing Director thought that it would be equally wasteful to utilize Government resources to audit initial pricing proposals. An ancillary benefit that would result by the delayed submission of pricing data concerns the fact that the opportunity for information leaks during technical evaluation would be reduced.

During the conference, the Government's basic justification for implementing NISTARS was affirmed as being a trade-off between a present expenditure for capital equipment and potential future savings on operational costs and reduced manning levels. The projected manpower savings would be lost if the project schedule slipped, so the rationale for the negative incentive of a $3000/day liquidated damages proviso

contained in the solicitation was explained. This negative incentive was contrasted with the positive incentive to be incorporated into the anticipated contract. The proposed fixed-price incentive contract parameters of a 130% ceiling and share ratios of 85/15 above and 60/40 below target were articulated [19:23]. (The share ratios were changed to 85/15 above and below target by an amendment to the solicitation dated 2 April 1980.) NSC Oakland's desire in constructing this contractual format was to indicate the Government's sensitivity to the contractor's risk in addition to providing a mechanism to enhance profit. This researcher would observe that the pre-solicitation conference was an intense effort by NSC Oakland to communicate positively with industry as to the Government's position in an effort to stimulate understanding and competition regarding the NISTARS requirement. Additionally, it appeared that the participants were heartily encouraged to be involved in the specification formulation and to suggest and justify mechanisms by which the Government could or should buy NISTARS.

1. Strategy Summarized

At this point a succinct summarization of the NISTARS acquisition strategy is in order. The strategy used or anticipated includes the following:

1) Broad based communications,

2) Application of formal source selection criteria,

3) Multi-year and multi-site contracting,

4) Use of performance specifications,

5) Incentives (both positive and negative),

6) Project management techniques,

7) Competition,

8) Two-stage negotiations,

9) Technical acceptance based on actual real-world conditions.

G. MANAGEMENT OF THE NISTARS PROJECT

The degree to which an acquisition strategy can be successful is directly influenced by the management structure that is established to develop, monitor and effect its execution. The purpose of this section is to delineate some of the key players and organizations involved with the management of NISTARS.

During 1977, the Navy was extremely interested in studying existing automated warehousing systems so as to infer the applicability and desirability of such installations at Naval Supply Systems Command (NAVSUP) stock points. The decision was made to proceed with the development and installation of a mechanized warehousing system. Therefore, NAVSUP deemed it necessary to establish "a special headquarters group and project team to plan, develop, coordinate and implement the integrated warehousing systems project at Naval Supply Centers in the 1980-1981 timeframe" [20:1]. A NAVSUP notice dated 21 September 1978 (Appendix B) established a project office hierarchy for NISTARS. Some of the "major considerations" for the project management group which were articulated in the

notice include: (1) to determine specifications against which contractors will bid for the warehousing system, (2) to examine alternatives available to provide an integrated warehousing system, (3) to assure that the implementation of the integrated warehousing system is effected in a timely manner, in conformance with available funding, and (4) to perform as the functional manager for the integrated warehousing system and coordinate and interface with the project officer at the selected naval supply center implementation sites [20:2]. Effective 1 October 1978, a formal project organization was established which had the structure cited in Appendix B.

Even though the NAVSUP notice called for a "project team," the promulgation of the Notice had a particularly interesting and relevant result, in that a distinctly different opinion regarding who should manage NISTARS emerged. This opinion regarding NISTARS management was based upon the belief that the management group established by the Notice would function in an "informal, not fully dedicated to NISTARS mode" rather than as an integrated, fully dedicated project team [22:1]. This suggestion was based in part upon the fact that the NISTARS management group as established in accordance with the Notice would retain functional organizational responsibilities in addition to those required by NISTARS. The logic espoused by advocates of this different viewpoint was that NISTARS is a vital project whose success (on schedule, within

budget and technical sanity) was of utmost importance; accordingly, a dedicated group, totally responsible for NISTARS, was necessary. Additionally, proponents of the project management concept believed that the charter and organization that was established via the Notice was deficient because: (1) NISTARS acquisition responsibility was diffused, and (2) organizational placement did not reflect the acquisition's importance. The establishment of a program office was suggested as a mechanism to resolve the perceived deficiencies and to provide the dedicated management necessary for NISTARS. Even though the magnitude of NISTARS does not technically qualify for mandatory major system program status, advocates suggested that a project management structure should be created because it would: (1) provide more visibility at the NAVSUP Commander's level, (2) bring clearly dedicated resources to the project, and (3) clearly establish responsibility for the project in one person. The suggested professional personality of the proposed program manager was that he be a Supply Corps Captain with system acquisition experience. The final points made by the proponents of a NISTARS program office were that there are a number of individuals who satisfy the suggested profile criteria and who would be eager for the opportunity to run the vital NISTARS project. The bottom line recommendation was that NAVSUP approve the concept of a NISTARS project office and subsequently forward a charter to the Chief of Naval Material (CNM) for approval.

The NISTARS program manager concept is contrasted with the other method considered for the management of NISTARS which was to conform to the integrated warehousing systems group (project office) as established by the NAVSUP notice. Both positions were presented to NAVSUP and the subsequent decision was to comply with the structure as delineated in the Notice. A brief discussion of the manner in which this project organization was executed follows.

In January of 1979, the Deputy Director, Materials and Facilities Division was assigned the additional responsibilities of project group leader as defined in the NAVSUP notice. This individual is a materials handling equipment expert who brought a high level of technical expertise to the project. In April of 1979 another project officer was assigned to assist with the NISTARS acquisition. This individual is a senior Supply Corps officer who had previously been assigned at NSC Oakland as the storage and shipping officer. Because of this latter tour of duty, he possessed valuable environmental insights and sensitivities for NSC Oakland, the first NISTARS implementation site. Additionally, while at NSC Oakland he had actively participated in the effort to develop NISTARS performance specifications. As was previously cited, the development of appropriate specifications was a major consideration for the project office. Accordingly, this individual's experience was of great value to the project office. Some of the key NSC Oakland players who were to have a

significant influence on the formation and execution of the NISTARS acquisition strategy included the first PCO and the resident NISTARS engineer. Some interesting background facts concerning these individuals are: (1) the Director of Purchasing, who also served in the capacity of the first NISTARS PCO, had previous major system acquisition experience, and (2) the engineer had been a major participant in technical aspects of the DISARS acquisition. In the Spring of 1980, a senior Supply Corps officer was ordered into NSC Oakland to assume the responsibilities of NISTARS PCO. This officer had previously been the DISARS PCO; accordingly he possessed a considerable insight into and experience with a prior automated inventory control warehousing system acquisition.

H. NISTARS AND THE DAVIS-BACON ACT

In addition to the project's management structure, the degree to which an acquisition strategy can be effectual is influenced by the impediments to its execution. This researcher suggests that an acquisition strategy should be flexible because all contingencies cannot be anticipated and planned for. The ultimate project impact of the Davis-Bacon (DB) Act was a potentially significant and unforeseen development that necessitated a timely and proper response by the NISTARS PCO.

The NISTARS project strategy had to be adapted to address the provision of the Davis-Bacon (DB) Act. Before developing this point, some background information regarding the Act

is important. Defense acquisition is subject to legislative mandates which impose a multitude of socio-economic programs designed to achieve social vice defense ends. An example is the Davis-Bacon Act of 1931 which provides: [2:1]

> ...every contract in excess of $5,000...which involves the employment of laborers or mechanics in the construction, alteration, or repair of any public building of the United States...shall contain a provision that the rate of wage for all laborers or mechanics shall not be less than the prevailing rate of wages for work of a similar nature in city, village, or civil division of the state in which the public buildings are located...

In 1935 a significant and relevant amendment to the DB Act stipulated that the minimum contract value for DB applicability was to be $2,000 and that the Secretary of Labor was assigned responsibility and authority to determine the prevailing wage rate in the area of all federally funded construction sites [2:1].

The NISTARS contracting officer was sensitive to the possibility that an offeror might propose a system that involved construction or alteration work. Since the solicitation specification was performance vice design, it was not possible at the point of issuance to infer what construction work, if any, would be required. Accordingly, offerors were requested to identify proposed building alterations in their initial technical proposals, in addition to the labor categories and percent of effort associated with alteration and modification, separate from that of installation work. The technical proposals received by the contracting officer

contained the requested categorization of alteration and installation work. In an effort not to appear or to be arbitrary, the contracting officer requested and received technical guidance from the Facilities Planning and Programming Branch of the Naval Supply Systems Command regarding which NISTARS performance aspects constituted construction or alteration. This action was significant because only the construction or alteration and not installation work falls under the dictates of the DB Act. The NISTARS PCO obtained legal guidance in addition to the technical determinations just cited. A legal review by the project's counsel established the following: [21:1]

1) DB clauses must be included in a supply contract only in the event that the contract provides for substantial (emphasis added) construction, alteration or repair to a building as defined in the DAR.

2) Offerors should be informed by a modification to the RFP as to what type of work at the proposed sites will be considered subject to DB provisions.

3) "Substantial installation" is not synonymous with "substantial construction."

By an amendment to the RFP dated 2 April 1980, the appropriate DAR clauses for construction contracts were incorporated. More specifically, the amendment affirmed that the Davis-Bacon Act provisos applied to those portions of work at the site which altered the structural, mechanical or electrical composition of the buildings in which NISTARS equipment is to be located. These were the general areas that the Facilities Planning and Programming Branch had suggested as

being areas of DB applicability. The drafting and dissemination of the RFP amendment addressed some but did not necessarily resolve all potential DB problems. For example, conflicting legal precedent surrounds the issue of DB clause applicability; accordingly, the NISTARS PCO made a determination regarding his interpretation of DB scope. Historically, DB legal precedent includes the "Roach Case" where a ruling was made that the DB clauses can be selectively applied to include just the alteration work performed upon a building. The "Norfolk Solicitation" illustrates a different connotation of DB applicability as the labor clauses were applied "across-the-board" to all the labor work performed at the building site, including erection, setting in place and hooking up of items [23]. This apparent legal latitude regarding the range of DB applicability was an issue that the NISTARS PCO desired to resolve. Accordingly, the following administrative actions were taken. First, a contracting officer determination was drafted and filed regarding the application of labor provisions for the NISTARS solicitation. Second, the previously cited 2 April 1980 RFP amendment was distributed in an attempt to clarify the Government's DB issue position for potential contractors. These actions are important because if the "across-the-board" applicability issue was sanctioned by the PCO or if it was used by some of the offerors in formulating their pricing proposals, then a significant project cost escalation could ensue. This hypothesis is based upon the

premise that installation wage rates are lower than construction rates, plus the fact that the Department of Labor (DOL) determined rates might exceed those which could have been used in the absence of a DB established labor scale. A major project cost impact can occur if the DOL determined wage rates do not reflect the true work site prevailing wages. An ancillary PCO concern was that he wanted to state clearly the Government's DB interpretation and application so that the contractors' pricing proposals would have a uniform labor provision baseline. If the offerors used a different frame of reference in preparing their pricing proposals, then the SSAC would have a more difficult time in determining which submission was best from the standpoint of the price evaluation criterion constraint. Additionally, the Government might be viewed as being inconsistent or arbitrary if ineffectual or non-existent communication resulted in a contractor using rates which lowered the merit of his proposal or precluded his receiving the award. The PCO's determination was a particularly significant action because in each case of a DB applicability protest, the Comptroller General has upheld the determination of the contracting officer where the latter, in good faith, made a reasonable application of the criteria found in the Government's procurement regulations [24:4]. Equally important to the issue is the ruling where the DAR was determined to have the force and effect of law and is binding on all concerned, including the DOL [27].

I. SCHEDULE

A PCO must be sensitive to any factor that could negatively affect the project's schedule; accordingly the NISTARS PCO wanted to limit the Government's vulnerability to a protest. The PCO envisioned the possibility of a protest as a result of either the timing of the amendment to the RFP or the Government's DB applicability position articulated in the amendment. Accordingly he extended and promulgated an adjusted date (30 May 1980) for the contractors to submit pricing inputs. NSC Oakland felt that one effect of this action would be to place a time limit upon any potential protest of the amendment because: [24:8]

> In the case of negotiated procurements, alleged improprieties which do not exist in the initial solicitation but which are subsequently incorporated therein must be protested not later than the next closing date for receipt of proposals following the incorporation.

An interesting and relevant sideline is the Comptroller General decision which concerns the fact that a failure to include DB provisions and applicable wage rates cannot be cured retroactively after award of the contract [9].

At this point it is appropriate to discuss some of the reasons why NSC Oakland envisions a schedule slip as being a particularly undesirable occurrence. NISTARS was justified and Other Procurement Navy (OPN) funding obtained because of projected manpower and Other Maintenance Navy (OMN) fund savings. The level of OM&N funding and the NSC Oakland manpower ceiling have programmed reductions impacting the year

that NISTARS is scheduled to come on line. Given the lead time required to submit and support Five Year Defense Plan (FYDP) budgetary and manpower changes, a significant adverse impact could ensue if the project either does not come on line as planned or does not perform to expectations.

Presently the NSC Purchasing Department is confident that an orderly reduction of ceiling points to the post-NISTARS implementation level can evolve even if the explicit acceptance date for the automated warehousing system is not known. The transition from a labor intensive process to a mechanized mode of operation is to be accomplished without a reduction in force (RIF). The projected rate of decline due to transfer, terminations and retirements is viewed by the NISTARS Procurement Team as being adequate to reduce the manning level. If this projection proves to be overly optimistic, then Oakland has the early-out voluntary retirement and temporary hire options to ease scheduling problems associated with the transition into NISTARS.

This study has contained numerous references to the fact that NSC Oakland wanted competition to be a vital factor in the NISTARS acquisition. The efforts by the Purchasing Department to obtain and retain competition could induce budgetary and manpower ceiling point schedule conflicts. The rationale for suggesting this potential problem is as follows. The submission dates for the technical and pricing proposal inputs both were extended so as to permit all possible offerors ample

opportunity for preparation. The previously discussed Davis-Bacon issue was as germane to the potential schedule slippage subject as NSC Oakland's aspirations for competition. The combined effect of these two factors was as follows: a contract for NISTARS was originally scheduled to be awarded in April of 1980; however, the cutoff date for the receipt of the price proposals has been extended to May 1980. Actual award is currently projected to occur in September 1980.

J. IMPLEMENTATION CONCERNS

The terms and conditions contained in the RFP stipulate that the eventual NISTARS contractor will have two years after the date of the contract to complete performance. OM&N dollars and manpower ceiling point reductions are programmed to coincide with the originally projected NISTARS operational schedule. The actions by the PCO to extend the technical and price input dates (to promote competition and to allow reasonable time for a response to the DB related RFP amendment) is in direct conflict with the project officers tasking to get NISTARS in on time. The ultimate impact of these diverse key project player goals is presently unknown. Another acquisition strategy implementation concern is the fact that the Project Manager is geographically separate from NSC Oakland. The Washington, D.C. based project officers must traverse the nation if they desire or are required to participate in on-site strategy formulation and execution. Time and coordination are not the only constraints associated with these sojourns as the current paucity

of travel funds frequently dictated telephonic or U.S. mail communication vice on-site liaison. An increase in administrative lead time and project frustration resulted. The acquisition strategy precept of utilizing performance specifications in the solicitation is the basis of yet another implementation concern. The use of performance specifications does complement the goal of attaining competition as the potential approach of the contractor is less structured, in addition to the fact that the past automated warehousing sole source contractor was not given an unfair advantage that could have been the case if a definitive specification had been used. However, concern stems from the fact that no one knows for sure if NISTARS will in fact perform. The SSEB had to rely on "professional judgment" in order to infer which proposals appeared to be technically acceptable. The merit of the winning proposal will not be firmly established until well into or after performance. When interviewed, the Director of Purchasing remarked that it had been his intention to buy a simulation program so that the parameters of the various NISTARS technical proposals could be verified as to performance feasibility. The FYDP lead time requirements mandated a tight project schedule which precluded the development of the simulation model which could have possibly eliminated some of the ambiguity associated with the NISTARS performance specifications.

K. SIMULATION

What is simulation? A general definition is "manipulation of a model in such a way that reality is imitated" [33:499]. The reason for considering the incorporation of this type of modeling in the NISTARS acquisition strategy was previously cited as being an extension of the Project Manager/PCO desire to reduce the technical uncertainty associated with the use of performance specifications. The NSC Oakland purchasing team elected not to pursue the use of simulation because they perceived that the tight project schedule precluded its development. However, this researcher would like to reflect briefly upon the considerations and possible results had the simulation option been utilized. Obtaining and using a good simulation model could have resulted in the following significant and desirable advantages [33:450]. First, the SSEB would have had the opportunity to experiment with the different variables in the technical proposals to determine performance validity and merit. Second, simulation modeling is amenable to time compression; accordingly the NSC Oakland purchasing team could have gotten a feel for proposal performance feasibility before award as opposed to waiting two years for the selected NISTARS contractor to perform. In an effort to balance the discussion, these two suggested simulation advantages are contrasted with the following potential disadvantages. The construction of a simulation model can be a slow and costly process which may not prove successful. An additional consideration is the fact

that an accurate simulation model requires an intimate knowledge of the problem and, since the software and integration aspects of NISTARS are highly sophisticated, this knowledge may not be readily acquired. If the Government's simulation model does not have credibility, then its use could diminish the degree of competition as contractors could be reluctant to invest time and money in the development of a technical proposal that could receive a perceived arbitrary evaluation. Furthermore, the use of simulation by the Government could evoke a contractor protest because a particular contractor could be excluded on the basis that his technical proposal was inferred to be unacceptable in light of the Government's simulation model. If, however, the contractor had his own simulation model and his approach was consistent with the model, then discussions or litigation could ensue as to the appropriateness of the various models.

L. LIFE CYCLE COST CONSIDERATIONS

The NSC Oakland NISTARS Procurement Plan contains an appendix entitled "Life Cycle Costs (LCC)." Included is the documented determination which reflects Oakland's decision not to incorporate LCC as part of the NISTARS acquisition strategy. When queried as to why this particular determination was made, the Director of Purchasing stated that the necessary time and in-house resources did not exist to perform an LCC applicability and benefit analysis. The purpose of

this section is to evaluate how LCC could have been applied to the NISTARS acquisition.

The Life Cycle Cost of an item is defined as its total cost at the end of its life, including all expenses for research and development, production, operation, support, maintenance, disposal and other costs of ownership, less any residual salvage value at the end of its lifetime [14:I-1]. This researcher suggests that one medium by which NSC Oakland could have incorporated LCC into the NISTARS acquisition strategy, given the paucity of people and time constraint, is as follows. The RFP could have been constructed to reflect the fact that LCC would be a highly ranked evaluation criteria. A contractor who effectively structured his proposal into a viable life cycle costing format could receive significant credit. If LCC were to be an integral aspect of the NISTARS acquisition strategy, then it would be necessary to structure the personnel complement of the SSEB to ensure that qualified individuals would be present in sufficient numbers to properly evaluate the LCC applicability of various proposals. Before the Government would include LCC as a major criterion in the NISTARS RFP, a significant benefit attributable to this methodology would have to be anticipated. Accordingly, a discussion of some of the considerations and constraints associated with LCC is warranted. Mr. Robert Seldon articulated the following LCC considerations in his book, Life Cycle Costing: A Better Method of Government Procurement [29].

(1) Can explicit performance requirements be written? (2) Will the life of the product be long enough to make operating and support costs a significant part of the total cost? (3) Are enough historical data available to permit a reasonable analysis of LCC? 4. Is the additional time required for LCC analysis acceptable? (5) Do both the buyer and the seller have the management resources to carry out LCC analysis? If the Government could have handled these issues in a reasonable fashion so that LCC could have been used in the NISTARS acquisition strategy, then the following advantages might have resulted: (1) The LCC estimating process can provide management with a comprehensive overall quantitative picture of a product's life cycle; (2) Promulgation of the Government's intent to utilize LCC analysis in the NISTARS project may have stimulated increased contractor interest in operating and support plans; and (3) If the contractor management became interested in and involved with NISTARS problems, then a better designed product might have resulted. NSC Oakland's ability to use LCC in the NISTARS acquisition strategy would be constrained by how much credibility the analysis format had with higher authority that had to approve the NSC Oakland procurement plan. If LCC had been included, the following forms of resistance might have been encountered. A political objection to incurring front-end costs which are alleged to result in later economies in operation and support. A different perspective of political resistance could manifest itself

if LCC is equated to being a pseudo "total package procurement." The cost overruns attributed to this later acquisition format are well remembered in Government. (3) Higher level authority may question the merit of LCC as a methodology and the validity of any data obtained to evaluate its merit. Resistance to LCC could additionally come from contractors who might be reluctant to provide and be bound to quantified estimates unless they can control the costs.

The basic goal of LCC is to minimize total cost and cost risk of a project. It is conceivable that LCC could make a significant contribution toward realizing these goals. However, its applicability and selection for use involves a tradeoff with other factors such as performance, schedule and immediate cost. In the case of NISTARS, schedule constraints precluded the use of the LCC analysis option.

M. SUMMARY

The purpose of this Chapter has been to articulate the explicit parameters of the NISTARS acquisition strategy formulation and execution so as to facilitate a comparison of the NISTARS acquisition strategy with the fundamental acquisition strategy issues that were developed in Chapter II. Areas developed in Chapter III included a general NISTARS strategy statement, a discussion of existing warehousing systems, amplification of NISTARS acquisition alternatives, a reflection on potential NISTARS contractual formats, an evaluation of project risk, a review of the presolicitation conference,

a discussion of the NISTARS management structure evolution, the constraints and provisions of the Davis-Bacon Act, implementation concerns, and some of the considerations associated with LCC and simulation.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY

The purpose of this study has been to identify and analyze the NISTARS acquisition strategy. A brief reflection on some of the key areas and issues that were developed follows. A fundamental question that had to be resolved was, "What was to be the management structure for NISTARS?" The monetary scope, impact and the sophistication of the applied acquisition technique mandated that personnel resources, in addition to those available at NSC Oakland, would be required for management of the project. The considerations associated with the two viewpoints regarding potential project managerial structure were developed and the high level decision that NISTARS was to be managed by a NAVSUP-based group was cited.

A paramount concept that pervades Government procurement policy, regulation and the acquisition strategy for NISTARS is competition. NSC Oakland made an overt effort to conduct the NISTARS acquisition in an open environment that would promote competition. The pre-solicitation conference was an example that was developed to illustrate how the Government attempted to use open communication to maximize the opportunity for competition. A key method used to facilitate competition in the NISTARS project was the use of performance specifications. The logic for using performance specifications parallels

that found in OMB Circular A-109, namely a potential contractor's approach is less constrained and accordingly he is free to develop an innovative and creative response to a Government need. The merit and value of performance specification usage can be diminished if there is a significant uncertainty associated with whether they will in fact precipitate the desired system performance levels. The general concept of simulation was discussed and the suggestion was made that the use of this technique could possibly minimize or eliminate performance uncertainty attributed to a performance specification-based solicitation. The tight project schedule precluded the development of a NISTARS simulation program. NSC Oakland's sensitivity to the project's time constraints also eliminated Life Cycle Costing (LCC) analysis from being applied to the acquisition. Even though LCC was not incorporated into the NISTARS acquisition strategy, some of the basic precepts and a suggestion of how the technique could have been applied were discussed.

The critical items that NSC Oakland learned and incorporated from their analysis of past automated warehousing system acquisitions have been presented. For example, Oakland's perception that the use of a FFP contract would give a bias or unfair competitive advantage to the previous sole-source contractor diminished its consideration for use. NSC Oakland's logic for anticipating a FPI instrument for NISTARS was articulated. The insights that the NISTARS acquisition team

obtained from their analysis of past automated warehousing system acquisitions influenced the formulation of the discussed acquisition alternatives for NISTARS. NSC Oakland's rationale for selecting the "two-phased procurement with a delayed submission of pricing" was presented.

B. LESSONS LEARNED

Originally, when this case study analysis was undertaken, a contract for NISTARS was programmed to be awarded in April 1980. If the project had remained on schedule, then this researcher would have had the opportunity to contrast the Government's anticipated or desired acquisition strategy result with that which was actually attained. Presently, the NISTARS contract is projected to be awarded at the end of calendar year 1980. Accordingly, the window from which this researcher can infer and articulate lessons learned has been abbreviated. Even with this constraint, the following enlightenment resulted from the analysis of NSC Oakland's efforts to acquire NISTARS.

Lesson #1 - Don't assume that the provisions of Government contracting are widely understood or accepted.

This insight resulted from a reading of the minutes of the NISTARS pre-solicitation conference. During the conference, the NSC Oakland Director of Procurement had been somewhat disconcerted by the number of contractors who indicated that they had either transacted business with the Government in only the traditionally formally advertised manner, or who, because of

a variety of reasons including aversion to Government procurement mandate (e.g., socio-economic requirements) had little desire to transact business with the Government. A general intra-industry naivete or aversion to Government acquisition could impair competition. NSC Oakland's response to this situation was to attempt to effectively communicate and educate the industry as to the desires, methods and intents of the Government regarding NISTARS. Potential contractors were encouraged to communicate with the Government, as evidenced by the RFP where contractors were invited to suggest and justify various contractual formats and acquisition alternatives suitable for NISTARS.

Lesson #2 - The concept of a single, designated program manager has significant merit and applicability for a project similar to NISTARS.

When interviewed, one key member of the NISTARS acquisition team expressed the opinion that the project had suffered from the lack of a single voice. The existing structure of having the technical and acquisition responsibilities vested in two different project officers was characterized as being effectual when a problem or question relating directly to either of these areas surfaced and for which guidance was solicited. However, it was alleged that when a situation arose which was not specifically in the province of one of the two project officers, guidance was more difficult to obtain. Under a program manager, a single person is in

charge who can assign responsibility, orchestrate key task completion and be a focal point for policy and guidance.

Lesson #3 - A NISTARS bulletin which discusses budget information, policy and project progress should have been published and distributed by the project office to the selected NISTARS implementation sites.

One key individual associated with the NISTARS acquisition noted intermittent disconnects in the distribution of project information to the three NISTARS sites (e.g., several amendments to the RFP were not received by all sites). The SSEB was comprised of individuals from each site; accordingly there were occasions when the board met and their initial actions were to normalize each person's knowledge of the current NISTARS situation. Potential benefits of the bulletin would be a currency of knowledge for all personnel associated with the project and enhanced inter-site harmony.

Lesson #4 - A better strategy to acquire NISTARS may have been to break out various parts of the system rather than strive for a single systems contractor.

An interesting and relevant background fact that emerged after the technical proposal submission deadline passed was that the largest and generally acclaimed best company that fields automated warehousing inventory control systems chose not to bid on the NISTARS contract. When this firm was queried by NSC Oakland as to why they chose not to compete, they allegedly remarked that the NISTARS scope was so broad

that all of their programmers would be required to work on just that project and they did not want the company's resources and financial future linked to one Government contract. If the biggest and best company in the industry was adverse to seeking the NISTARS award, then perhaps it might have been more reasonable to consider acquiring the software, hardware and integration service from the firms that specialize in these functional areas rather than trying to acquire all three from one contractor.

C. CONCLUSIONS

Conclusion #1 - NSC Oakland's acquisition strategy goal to promote and attain competition was satisfied.

Three offerors submitted technical proposals. One of these contractors was found to be unacceptable by the source selection evaluation process. Given that there are few companies who could perform or who would actively seek the NISTARS contract, it is the opinion of this researcher that the effort to obtain competition was successful.

Conclusion #2 - Project competition was promoted by effective communication of the NISTARS source selection criteria at the pre-solicitation conference.

The fact that the Director of Purchasing explained how and why the Government established the envisioned contractual incentives (e.g., FPI share ratios and the 7% cancellation ceiling) positively conveyed to the conference participants

the Government's flexibility, objectivity and fair and reasonable approach to risk.

Conclusion #3 - The NISTARS acquisition strategy was reasonably and expeditiously adjusted to address a problematic interpretation of the provisions of the Davis-Bacon Act.

One measure of the proficiency of an acquisition team is to note how and if they react to an unanticipated potentially adverse situation. The magnitude and ultimate impact of the Davis-Bacon Act was unforeseen by the NSC Oakland acquisition team. However, once the issue surfaced, the DB related actions taken by the PCO to avoid the appearance of being arbitrary, to promulgate a uniform labor provision pricing baseline and to attempt to minimize the opportunity for disruptive contractor protests or Department of Labor intervention, are viewed by this researcher as being responsive and effective.

Conclusion #4 - Simulation modeling was eliminated from being incorporated into the NISTARS acquisition strategy because of a perceived lack of time for its development. Given that the project schedule has slipped, this mechanism could have been used.

The potential project gain resulting from having the capability to perform a NISTARS performance specification feasibility analysis coupled with the opportunity to more objectively evaluate offerors' technical proposals trades-off the front-end investment of time required to develop a simulation model.

Conclusion #5 - The Life Cycle Costing technique might have been applied to NISTARS.

LCC could have been a viable aspect of the acquisition strategy; however, required personnel and monetary resources in addition to the difficulty in attributing direct potential benefits to NISTARS precluded LCC from being considered. The current schedule delay places the possibility of having incorporated LCC in a more favorable light. The concept was given inadequate attention in the early acquisition planning.

Conclusion #6 - NISTARS can be effectively awarded by either a CPIF or a FPI contract.

As was discussed in Chapter III, the NISTARS project is comprised of a variety of diverse risk components. The performance cost and schedule risk factors are potentially personified by virtue of the turbulent national economic environment in which the system is to be acquired. The FPI and CPIF contract each can be structured so as to equitably share the project's risk in addition to providing incentives which will induce and reward high level performance.

Conclusion #7 - The strategic option of contracting for a design specification package has significant merit and applicability for a project like NISTARS.

One of the reasons that was previously cited for using performance specifications was that they can promote competition. If design specifications can be obtained, then the same result of facilitating competition can also be attained

because the Government is afforded the opportunity to pursue the following:

(1) The system could be acquired via the formally advertised medium (including two step formal advertising).

(2) The Government could split the system into integral functions and then make several awards.

(3) Government furnished equipment (GFE) could be acquired and provided to a software developer and system integrater.

Conclusion #8 - The fragmented technical, business, financial and contractual management of NISTARS vice having a single, central program management authority, has served to reduce the number of acquisition strategies which could be adequately explored and addressed and has contributed to the delay of a timely execution of the acquisition strategy finally selected.

Research has established that of the acquisition strategies that were considered, most were rejected. The researcher has identified several other strategies and concepts which could have been pursued if adequate planning and lead time had been provided, for example, life cycle costing and model simulation.

Conclusion #9 - The use of formal source selection criteria positively contributed to the NISTARS acquisition.

It is the opinion of this researcher that the following benefits resulted from the use of formal source selection criteria. The NISTARS award will be made as a result of a

particularly objective evaluation mechanism. Accordingly, the source selection should be able to withstand intense scrutiny. Additionally, the SSEB and SSAC were comprised of individuals drawn from diverse geographical locations and functional disciplines. These factors reinforce the suggestion that the source selection will be fair and reasonable in addition to the fact that the functional experts can make a significant contribution toward selecting the best proposal. The process of establishing a plan resulted in a much wider participation by diverse functional disciplines than might otherwise have occurred. This researcher believes that this broadening aspect tended to involve more experienced personnel than if NSC Oakland had been relied upon entirely for the necessary personnel assets.

Conclusion #10 - The two-phased submission of the pricing and technical proposals enhanced the NISTARS source selection process.

Requiring the initial submission of technical proposals and a delayed input of the pricing data resulted in a number of desirable benefits. First, aspiring contractors were able to spend all their time and resources initially developing technical proposals. The offeror who was found technically unacceptable was eliminated from consideration before being subjected to the task of formulating a price proposal. Second, Government resources were not ineffectually used to evaluate or audit initial price proposals which are subject to change.

Third, the opportunity for information leaks during technical evaluation was eliminated with the delayed pricing submission.

D. RECOMMENDATIONS

Recommendation #1 - Assign a Project Manager for NISTARS.

A strong, central authority will draw together all elements of the project into an integrated project organization which will be better able to respond on a systematic basis to technical, financial and contractual problems. It is suggested that this PM should report directly to the Commander, Naval Supply Systems Command.

Recommendation #2 - For future projects which are similar in scope to NISTARS, establish a separate dedicated project office management structure.

The potential benefits of this organizational structure are: (1) the project responsibility would be clearly established and focused upon one person, (2) guidance, policy and general communication would be easier to disseminate, and (3) the project could be staffed with individuals who were totally dedicated to the project because they would be insulated from ancillary responsibilities and tasking. The project office management concept could be executed in an easy fashion (e.g., if NAVSUP had approved the concept of an explicit project office for NISTARS, then a charter could have been prepared and forwarded to CNM for approval).

Recommendation #3 - Future projects of a magnitude similar in scope to NISTARS should be allowed sufficient acquisition planning time.

The allocation of a reasonable amount of planning time may preclude having to eliminate potential viable acquisition alternatives because of a lack of time to analyze their merit.

Recommendation #4 - It is suggested that the Project Office institute a NISTARS bulletin.

The manpower and fiscal expenditures that would be associated with such an action are minimal when contrasted with the potential benefits of currency of knowledge and inter-implementation site harmony. The bulletin could be distributed from the project office on a periodic basis and its contents could include a general project situation report in addition to highlighting any special or anticipated occurrences. This recommendation is extended to any future projects which may be similar to NISTARS.

APPENDIX A

PROCUREMENT PLAN NUMBER: OAK 79-01
"COPY"

Procurement Plan Number: OAK 79-01

Program: Naval Integrated Storage Tracking and Retrieval System (NISTARS)

Program Manager: COMNAVSUPSYSCOM (SUP 032)

Description of Program: An integrated, process controlled warehousing system for the receipt, storage, retrieval, consolidation, packing and tracking of bin, rack and bulk materials. The warehousing systems will be located at the Naval Supply Centers, Oakland and San Diego, California, and Norfolk, Virginia.

Approved:

_____
Contracting Officer Date

_____
Procurement Representative Date

_____
COMNAVSUPSYSCOM (SUP 032) Date

Distribution:
CNM (MAT 02) (10 copies)
COMNAVSUPSYSCOM (10 copies)
NSC Oakland (5 copies)
NSC Norfolk (2 copies)
NSC San Diego (2 copies)

1.0 PROGRAM DESCRIPTION

Naval Integrated Storage Tracking and Retrieval System (NISTARS) is a complete system for controlling all material handled at Naval Supply Center storage facilities. A basic criteria for the system is that it will be universally applicable. Only the mechanized material handling portion of the system will need to be modified to accommodate the differences in facility configurations.

NISTARS will provide detailed, step-by-step process controlled and cost effective mechanization for all warehouse distribution functions, including receiving, storing, issuing, consolidation and parcel post shipping. It will provide the information necessary to assist the shipping facilities to consolidate and optimize the transportation system. In addition, NISTARS will control the necessary warehouse service functions of inventory, rewarehousing, stock number changes, condition code changes, shelf-life management and associated UADPS inventory management procedures.

To accomplish the required performance, NISTARS utilizes a dedicated process controller with intelligent remote terminals, micro-processor controlled material handling equipment and associated storage aids. The intelligent remote terminals will be located strategically throughout the warehouse complex to provide detailed operator instructions necessary for all warehouse processing. As this processing is accomplished, NISTARS instantly updates the system records to provide real-time information and control.

NISTARS features the ability to integrate random emergency requests for material immediately into the pending routine workload; to immediately compensate whenever any variation in the actual situation deviates from planned or estimated work flow; and to print the issue documents and shipping labels at the point of pick and pack respectively.

2.0 CURRENT/PLANNED FUNDING

All funding for this program and for contracts awarded thereunder will be by OP,N funding.

Site	Cost (in millions)	
	FY 80	FY 81
NSC Oakland	(omitted - contract sensitive data)	
NSC Norfolk		
NSC San Diego		

The cost estimates were formulated utilizing data obtained from WICS, DISARS and ASKARS. The three sites were then costed based on known transaction volumes and projected workload increases associated with SER V. Norfolk and San Diego costs were increased by the inflation index as they are to be funded in FY 81.

3.0 DELIVERY REQUIREMENTS

NISTARS is required to effect the productivity gains and economics of operation attendant by the SER study report. In order to meet the commitments in the SER study report, the contract for NISTARS must be awarded by 15 April 1980.

The contractor must be notified of the availability of funds for the second program year by 15 October 1980.

Listed below is the delivery schedule for the three systems:

Site	System Ready to Load	Acceptance Test
NSC Oakland	18 months ADC (15 Oct 81)	24 months ADC (15 Apr 82)
NSC Norfolk	26 months ADC (15 Jun 82)	32 months ADC (15 Dec 82)
NSC San Diego	36 months ADC (15 Apr 83)	42 months ADC (15 Oct 83)

4.0 DECISION COORDINATING PAPER (DCP) OR PROGRAM MEMORANDUM, DEFENSE SYSTEM ACQUISITION REVIEW COUNCIL (DSARC) OR INTERNAL SERVICES REVIEWS

Not applicable

5.0 BACKGROUND AND PROCUREMENT HISTORY

5.1 WICS

The technology for a warehouse process control system was developed under the Warehouse Information Control System (WICS) procured for Warner Robins Air Force Base. The contract was negotiated under 10US2304(a)(10) as implemented by paragraph 3-210.2(xiii) of the DAR since it was determined that offerers might take exception to and/or that there would be a need to negotiate areas of the performance specification. Three offerers responded: Clay Bernard Systems International (CBSI), Raymond Mobility Systems, Inc., and Otis Elevator Co. The award of a firm-fixed-price contract was made to the low offerer, CBSI. Technical proposals were not solicited.

The contract was issued in April 1975, conditional approval was granted on 28 October 1977 and final acceptance took place on 5 May 1978. The contract negotiator stated that 18 months would have been a realistic delivery, however, the actual three year delivery resulted from construction delays, the death of a key programmer, specification changes and production problems. The final acceptance was based on a simulated test, but in fact, the system has failed to produce the tested 5000 throughput under real conditions. The system is currently handling 1800 transactions per day. The WICS has failed to meet the designed throughput requirements for several reasons:

a. limitations of the Data General Process controller,

b. electromagnetic interference of the wire guided vehicles,

c. insufficient loading of the system,

d. motivation of personnel.

Forty-two modifications have been issued to date resulting in an increase of $1,866,049 from $4,627,918 to $6,493,967. The price increases were due to the exercise of an option, the addition of work the Government was originally scheduled to perform, and engineering changes.

A failure to initially identify data requirements resulted in the Government receiving only restricted data rights to the system.

5.2 DISARS

The technology was expanded under the Depot Integrated Storage and Retrieval System (DISARS) procured by DCSC for the Defense General Supply Center, Richmond, Virginia. The acquisition was started as a two-step, formally advertised, firm-fixed-price procurement. Out of 44 firms solicited under step I, two firms responded: Clay Bernard Systems International and MB Associates. Both technical proposals were determined acceptable, and, consequently, both firms were solicited under step II. Prior to the opening of the second step, MB Associates advised DCSC that they would not submit a bid because of the financial risk involved. The IFB was changed by amendment to an RFP and negotiations were conducted with the single offerer CBSI.

The contract was issued on 10 July 1978. After six months there have been no modifications to the contract. CBSI has proposed several changes, but these have been rejected by the Government. There was a slight delay caused by the Government on the software programs; however, the project manager expects the system will come in on schedule.

Due primarily to funding limitations, DISARS was procured with restricted data rights.

5.3 ASKARS

The Automated Storage Kitting and Retrieval System (ASKARS) is a related process-controlled system bought by NRPO Long Beach for four NARF sites. This proposal was also begun as a two-step formal and, after receipt of only one technical proposal (from CBSI) was converted to a negotiated procurement. The first system was scheduled for delivery on 20 January 1979 but a delay of approximately one month is expected owing to delays caused by the MHE subcontractor. Approximately $100,000 worth of increases over the original contract are attributable to engineering/design changes. The data bought with ASKARS is not applicable.

5.4 CONCLUSIONS AND ACQUISITION STRATEGY

5.4.1 The Naval Integrated Storage, Tracking and Retrieval Systems (NISTARS) is the next logical step in automated warehousing technology. WICS, DISARS, and ASKARS are process-controlled systems utilizing a single automated material

handling device and configured to meet a specific warehousing application. NISTARS, in comparison, will provide process control for all general purpose warehousing functions and be capable of controlling multiple types of material handling equipment, both automated and manual. In addition, it will be capable of supporting remote supply facilities. The process control software for the other systems cannot control all of these functions.

Utilizing past procurement history the NISTARS procurement has been designed to attract competition and at the same time be aware of the possibility and attendant risk of sole-source negotiations.

Several specific procurement approaches have been proposed in order to generate competition. Several of these approaches are discussed in more detail in later sections, however, they are synopsized below to give an overview of the efforts to make the procurement competitive:

a. Performance Specification: Both ASKARS and DISARS used a detailed design specification with performance parameters. Since DOD's primary knowledge of integrated process-controlled warehouse systems comes from WICS, DISARS and ASKARS, a detailed design specification would be built on these predecessor systems and would be likely to favor CBSI. By using a performance specification, firms will be able to propose a system design consistent with their own hardware and software capabilities.

b. Multiple site: The development cost of an integrated, process-controlled warehousing system is substantial and in order to remain competitive, a firm would need a large base over which to distribute the costs. The three-site approach provides a substantial base for allocation of direct and/or indirect costs.

In addition, the multiple site approach takes advantage of the extracontractual incentive of the potential for future business. The Navy's commitment to develop NISTARS at the three Supply Centers implies a commitment to the concept of integrated, process-controlled warehousing and, consequently, a potential for follow-on contracts.

c. Multi-year: Since CBSI has developed similar systems they are in a position to underbid their competitors because they have already recouped some of the development costs. The multi-year/multi-site method provides

assurance to firms just entering the field that they will be able to recoup unamortized start-up costs with a cancellation ceiling should the government not elect to procure all three systems.

In addition, since the government has to commit the costs of a cancellation ceiling and since fund availability is the only determinant in proceeding with the additional program year, industry perceives the multi-year contract as a firmer commitment to procure all three systems.

d. Fixed-Price Incentive: The predecessor systems have been bought on a FFP basis and it appears that cost risk for this type contract has dissuaded firms from competing. The fixed-price-incentive type contract will reduce the cost risk to the contractor since the government will share overruns up to the point of total assumption.

e. Source Selection Plan: Several firms indicated that they were discouraged from bidding on government contract since proposals were always solicited under formal bid procedures with award being made solely on the base of price, without regard to the quality of the supplies being purchased. Under the proposed negotiation procedures proposals will be evaluated on technical factors in addition to price and the award will be made to the firm whose proposal offers the greatest value to the government from both performance and cost standpoints.

5.4.2 In addition to the above factors which directly impact on competition, there are several other features of the procurement plan developed from a review of past procurement history:

a. Negotiation: Both DISARS and ASKARS were begun on a 2-step formal bid basis and had to be converted to negotiated solicitations when competition failed to materialize. Clay Bernard Systems International was effectively put on notice that they were the sole offeror and, in the minds of the respective negotiators, became more intransigent during negotiation.

Since procurement history, contract type, and source selection method preclude the use of a formally advertised solicitation, the contract will be negotiated with a delayed submission of pricing proposals.

b. Turnkey System: WICS, ASKARS and DISARS have all been procured on a turnkey basis as an integrated

software and hardware package. One firm has suggested that if the system were broken out into separate hardware and software packages with the Navy acting as systems integrator more competition would result. The primary objection to this suggestion is that the technical risks for the government would be increased enormously. In the case of a turnkey system the Navy would accept a fully functioning system that meets specific performance parameters. In the case of separate contracts, if the system fails the tests, there is likely to be a lengthy battle over whether the hardware contractor, software contractor, or the Navy as integrator is responsible for the failure.

In addition, there is substantial doubt as to whether more competition would be generated particularly in the large risk area--software. As stated above, without the large base over which to distribute development costs it is unlikely that a new firm would be interested in bidding.

5.4.3 To allow industry input on the specifications, a presolicitation conference was held on 31 January 1979. A notice of the presolicitation conference was published in the Commerce Business Daily on 22 January 1979 and individual letters to prospective offerors were sent on 12 January 1979. The list of 28 firms who received the individual notices was made up from sources supplied by (1) the NISTARS project office, (2) the WIC, ASKARS and DISARS negotiators, and (3) the Thomas Register. Twenty-six firms attended the presolicitation conference: ten in response to the individual notices and sixteen in response to the CBD announcement.

The agenda for the conference included a brief overview of NISTARS, an overview of the proposed procurement plan, distribution of the proposed specification, and a discussion of both the procurement plan and the specification. At that time there were very few specific comments on the specifications except for a criticism that the controller portion of the specification was too restrictive. The discussion of the procurement plan indicated a definite lack of knowledge of government contracting; a number of the firms apparently either had never done business with the government or only had done business on a firm-fixed price, formally-advertised basis.

Prospective contractors were requested to submit written comments to the contract negotiator. Three firms forwarded detailed comments on the specifications; and one among those commented on the procurement plan suggesting that a CPFF type

of contract would be more appropriate. A fourth firm, Jervis B. Webb Company, submitted lengthy comments on the proposed procurement plan.

5.4.4 COMPETITION

From preliminary indications, it appears that NISTARS will be a competitive procurement.

The three firms forwarding detailed specification comments have subsequently asked questions which indicate they are at least making preliminary studies preparatory to bidding. Additionally, in a discussion between a potential subcontractor and the contract negotiator, the contractor identified two other firms (from among those attending the presolicitation conference) who were considering bidding as prime contractors.

6.0 RISK: OVERVIEW

NISTARS does not go beyond existing technology in either hardware or software development. Although the Navy would encourage a proposal that reflected a breakthrough in material handling equipment design, offerors are expected to propose equipment that is currently commercially available (possibly with minor modifications). To a large extent the same hypothesis is true in the software area. "Ready-made" software programs are not available, however, the software programs envisioned are well within the current capability of the software industry. Nor is the marriage of the software and MHE industry new. In addition to the DOD applications cited in paragraph 5, industry has for some time employed various forms of integrated, process-controlled warehouse operations. NISTARS does go beyond existing commercial and military systems in the areas of throughput and the number and complexity of items received and issued. The WICS requirement was 5000 transactions per eight hour day, DISARS was 8000 and NISTARS is 18,000. A more detailed comparison of DISARS and NISTARS is shown below:

Per 8 hr day	DISARS	*UPGRADED DISARS	NISTARS	*UPGRADED NISTARS
issues	7,200		15,000	25,000
receipts	800		3,000	5,000
Peak load per hr				
issues	990	2,340	2,500	4,200
receipts	110	260	650	1,000

*Under the initial procurement the contractors software must be capable of expansion to accommodate the increased number of transactions. However, in order to process the larger number of transactions a separate, parallel set of material handling equipment would have to be procured and installed. The final decision to expand the system will be based on workload requirements.

The throughput figures alone do not explain the extent of the risks. Obviously a system which processed a small number of items in large batches could easily meet the throughput requirements. In general the existing commercial systems with high throughput requirements are designed to receive and issue a limited range of items stored in limited number of locations and picked in large batches. By contrast, both DISARS and NISTARS are designed to control a much wider range of items and number of locations and are designed for individual picks.

	DISARS	NISTARS
Number of NSN's	750,000	1,500,000
Number of Locations	2,000,000	3,600,000

Another feature which distinguishes NISTARS from its commercial counterparts is the number of interfaces required (i.e., UDAPS, NAVADS, etc.). The interfaces combined with the required management control and information systems form a complex data package which exceeds the software requirements of commercial systems. Thus, the NISTARS requirements present an interesting dichotomy: The data requirements are well within the capability of the software industry but exceed the normal data capability of the material handling industry. The answer to this problem is found in the firms expected to respond to the solicitation. All three firms who provided detailed comments on the specification following the pre-solicitation conference have strong software and systems integration backgrounds with more limited material handling equipment (MHE) manufacturing expertise.

This type of contractor is also logical considering the MHE requirements. The predecessor systems all used a single type of equipment: WICS and DISARS, wire guided order picking vehicle; ASKARS, automatic mini-load retreiver (stackers). In order to produce the required NISTARS throughput it is anticipated that the offerors will have to use a variety of equipment, potentially including carousels, mini-stackers, mobile order-picking vehicles and packing sortation equipment. There is no known individual firm which can supply that diverse an equipment list. Thus the contractor will have to subcontract at least a portion of the MHE and integrate it into the total system.

6.1 TECHNICAL RISK

As indicated above in the discussion of the WICS system, the major technical risk is that the system will fail to achieve the required throughput. The following analysis of the WICS system together with statements of the corrective and preventative measures employed in NISTARS indicate that similar problems should not occur:

a. The Data General Process Controller used on WICS is core limited and cannot be expanded. Additionally, it cannot be operated in parallel with a second CPU and obtain realistic dual processing capability. This core expansion is necessary in order to achieve the required response times. NISTARS specifications are more demanding in this area and will correct these types of problems.

b. The order picking vehicles communicate with the process controller utilizing the wire guidance line. The data transmissions are being garbled because of electromagnetic impulses in the line which cause the process controller to shut down. NISTARS will require alternative communication methodologies if order picking vehicles are proposed (other than through the wire guide).

c. The WICS is only approximately 30% loaded. This causes excessive travel time between picks with the resultant loss of productivity. NISTARS will load the system for six months before the acceptance test and then process all new eligible receipts in the automated warehouse: thus NISTARS will be tested (and will operate) with a fully loaded system.

d. The WICS system was tested using computer technician type personnel. It has subsequently functioned with regular warehouse people, many of whom do not have an aptitude for the computerized system. In addition, DLA has not established productivity standards for the warehouse people and, although one woman processes 500 transactions per day, the average is slightly less than 200.

By contrast, at NSC Oakland a position description has already been established for warehousing-data entry. The creation of a separate PD has the advantages of (1) allowing for aptitude testing of applicants, and (2) attracting the best people through promotion. Also, a management control system will be supplied as part of the software and this will give management the tools to monitor and control productivity on an individual level.

Additionally, NISTARS shares with WICS, ASKARS and DISARS the use of turnkey concept with the contractor responsible for the design, material, software, integration and installation. The contractor is responsible for delivering a fully functioning system, thus, the risk to the government is substantially less than if the Navy were responsible for the design and system integration. The problem with WICS was not with the turnkey concept, but rather with acceptance based on simulation using an ideal situation. By contrast, NISTARS will be tested on an actual operational basis.

The use of a performance specification as opposed to a design specification is also a means of reducing the risk to the government. The performance specification shifts the design responsibility and consequently the performance responsibility to the contractor.

6.2 COST RISK

Originally NISTARS was planned for three different geographic areas--NSC Oakland/NAS Alameda, NSC Norfolk/NAS Norfolk, and NSC San Diego/NAS North Island--with separate procurement actions for each site. The cost for each system, based on this procurement strategy, could result in repetitive costs for program development if different contractors were supplying the equipment/system at each site. This cost risk is reduced through the proposed procurement strategy which would result in one contractor for all three sites. In addition to eliminating repetitive software development costs, the use of single contractor will permit quantity discount savings.

As indicated by the prior procurement, with a new system there is a potential for cost increases as a result of system improvements.

There are several cost risks associated with multi-year contracting:

a. if funding for the second program year is not available, the cost of the cancellation ceiling will have to be absorbed; and

b. under the accompanying price adjustment provisions, labor and material increases are possible.

The last risk should be offset to a certain degree by the use of multi-year contracts which will encourage contractors to place advance orders or option orders for the material handling equipment, thus taking advantage of quantity trade discounts and reducing the increases resulting from inflation. Since it is expected that the material handling equipment will constitute approximately 75% of the cost of the system, the savings would be significant.

6.3 SCHEDULE RISK

A slip in any major milestone will result in increasing the risk of meeting the planned award date and subsequent slippage in the planned operational dates. If these deadlines are not met the planned implementation dates for NISTARS will be delayed which will result in postponement of projected manpower savings associated with implementation of these systems. Thus the contract will include liquidated damages provision based on a projected daily cost savings of over $3,000.

Based on the procurement history the schedule risk is increased if a new contractor is awarded the contract. A new contractor

is likely to encounter at least some of the problems that previously have been solved by CBSI and will require time to redevelop solutions.

7.0 INTEGRATED LOGISTICS SUPPORT PLANNING CONCEPT

The system that will be installed to the performance specifications will be an integration of standard, off-the-shelf material handling equipment components and commercially available process control equipment. Technical proposals, in order to be considered responsive, will contain information regarding the maintenance concept, corrective and preventive maintenance requirements, skill level requirements of maintenance and operational personnel, maintenance data package (including drawings), repair and maintenance part requirements and test equipment requirements. In addition, the prospective contractor will be required to spell out the components of the system which are not off-the-shelf and a proposed spare parts/sub-components plan needed to maintain these components.

Hardware and software maintenance will be provided by the contractor for one year after acceptance at each site. During this period the contractor will train Navy personnel in the maintenance of both the hardware and software. For a discussion of buying full data rights, see section 19.7.

8.0 DESIGN TO COST

Not applicable.

- -

9.0 APPLICATION OF LIFE CYCLE COST

Not applicable.

10.0 RELIABILITY AND MAINTAINABILITY

Reliability of the process controllers is specified as 100%. By this requirement the process controllers and the associated supporting equipment shall be designed so that there is not only redundancy of equipment but also redundancy of communications links between the various systems components. With this system configuration it is considered the reliability requirements will be accomplished. Any technical proposal that does not offer to meet the system reliability requirements will not be favorably considered. System components shall be tested a minimum of 1000 hours, with no more than three failures permitted, to ensure the required degree of reliability. Additionally, the system software shall be "burned-in" a minimum of 1000 hours with no more than five failures.

System components are specified to be of modular design to simplify the maintenance effort. The system remote terminals will be designed to accept and retain instructions on all required warehousing functions from the primary warehouse process controller. This feature of the system design will provide a backup capability by either interchanging equipment or functional assignment. Interchange will be done on a prioritized basis dependent upon the functional requirements at the time equipment substitution is necessary.

A proposed quantity of spare electronic control devices for each subsystem shall be provided. They shall include the full spectrum of electronics for each work station and shall include, but not be limited to all housings, power supplies, printers, printed circuit boards, consoles, keyboards, badge reader, and communication devices.

The above shall be complete in all respects and be able to fully replace the electronic package as a composite for any work station in the system. The units shall be designed to allow removal and replacement of a defective package as a whole. In addition, the units shall be of such design as to be fully repaired as a unit in the maintenance repair area whether as a unit attached to a work station or as a stand-alone spare unit.

11.0 TEST AND EVALUATION APPROACH

The system is being procured and installed under a performance specification with the contractor being responsible for meeting the throughput requirements set forth in section 6.0.

The procurement history provides "lessons learned" in the test and evaluation approach. The WICS was accepted based on a test which was run using dummy material (empty boxes), contractor personnel operation of much of the system and with contractor personnel involved in the initial loading of the system. The system has been unable to duplicate the "simulated" 5000 transaction throughput under actual operating conditions.

NISTARS provides that the system will be loaded with actual cargo by Navy operators for six (6) months prior to conducting the acceptance testing. The test will then be conducted utilizing Navy personnel with actual transactions in order to certify that the specified throughputs are achieved.

12.0 MANAGEMENT INFORMATION/PROGRAM CONTROL REQUIREMENTS

Progress reports will be submitted by the contractor to COMNAVSUPSYSCOM (Code 032N), the PCO and the ACO every thirty (30) days. The progress reports shall include, as a minimum, the following:

a. Project Summary--a report consisting of from one to three pages that will, in a short form, describe the status of the project as a whole, particularly highlighting all problems that may exist or if there are any potential delays.

b. Milestone Update--a detailed milestone plan shall be provided with updates which shall cover, as a minimum, the following areas:

(1) Production Schedule for all in-plant production.

(2) Software Schedule to cover the design, coding, testing, debugging and on-site installation of all software associated with the project.

(3) Installation Schedule to cover the installation of all equipment and components of the system. Additionally, it shall include milestones covering the acquisition and installation of any transmission lines external to the designated NISTARS buildings.

The ACO will provide the PCO with comments concerning each progress report relative to the correctness of the information provided.

The Government will assign a full-time on-site contracting officer's representative at each of the three installations. The contractor shall name a full-time NISTARS project manager for this contract and a resident project manager at each of the three sites.

13.0 APPROVAL FOR OPERATIONAL USE

Not applicable.

- -

14.0 GOVERNMENT FURNISHED MATERIAL/FACILITIES/COMPONENT BREAKOUT

The only Government furnished facilities are the buildings where the systems will be installed at each site and the associated utilities.

- -

15.0 APPLICATION OF SHOULD COSTS

Not applicable.

- -

16.0 MILESTONE CHART

See Attachment A. (Insert omitted in thesis.)

- -

17.0 MILESTONES FOR UPDATING THE PROCUREMENT PLAN

The procurement plan will be updated whenever changes that materially affect the method of procurement and/or objective of the plan occur.

- -

18.0 PARTICIPANTS IN PROCUREMENT PLAN PREPARATION

The following personnel assisted in the preparation of this procurement plan:

Mr. T. L. M. Wiegant	Ms. J. Weaver
Commander D. M. Chism SC, USN	Lieutenant Commander M. Kalapos SC, USN
Commander W. M. Hyman SC, USN	Ms. P. Walker

19.0 PROCUREMENT APPROACH

19.1 Item Description - see paragraph 1.0.

19.2 Estimated Cost - see paragraph 2.0

19.3 Proposed sources and basis for selection.

As indicated in the synopsis of the acquisition strategy, the procurement has been designed to attract maximum competition. The bidders list used for the presolicitation conference will be expanded by adding names from the list of attendees to the 1979 Automated Material Handling and Storage System Conference, and, the solicitation will be synopsized in the Commerce Business Daily.

19.4 SOURCE SELECTION PROCEDURE

19.4.1 Formal Source Selection Plan

Although this program is not a designated major defense program, the Source Selection Plan for the evaluation and selection of the contractor incorporates the objectives and policy established by NAVMAT Instruction 4200.49 dated 28 February 1977.

19.4.2 Negotiations

NISTARS will be a negotiated procurement with a delayed submission of the pricing proposals. The pricing will be submitted at a later time for the following reasons:

a. During the presolicitation conference the prospective contractors stated that they would need the additional time to prepare the price proposal. Also they indicated that they didn't want to waste their resources developing initial cost data since (1) their proposal might be determined to be unacceptable or (2) technical changes might nullify the initial pricing.

b. The last argument is equally valid for the government. Pricing information, if provided in the first phase, would be useless. Because of the time required for technical discussion, the initial prices could only be used as gross estimates. In addition, it would be too time consuming and unproductive for both the government and the offerors to attempt to reconcile the initial pricing and the final offers. It would be useless and a waste of government resources to submit the initial proposal for audit.

c. The delayed submission of pricing information reduces the opportunity for information leaks. A discussion overheard or a careless leak could jeopardize the entire procurement. The government must be as careful about appearances as occurrences; the delayed submission reduces the possibility that an offeror could think there had been a leak.

Consideration was also given to using two-step formal advertising, four-step negotiation, and conventional negotiations. Two-step formal advertising was eliminated since formal bid procedures are inconsistent with a fixed price incentive contract and since the government has not been able to obtain competition on recent similar procurements using the two-step methos.

The use of the four-step method was not considered desirable since the restrictions in discussions would severely reduce the opportunity for real competition. Although conventional negotiation methods carry a danger of technical transfusion, this danger is reduced by several factors. First, the general concept is already well established in the market place. This is not a research effort but rather a new application of existing technology. Thus, barring a major technological breakthrough, no truly original approaches are anticipated. Second, the technical evaluators are sufficiently knowledgeable to provide comments and guidance to the various competitors without reference to any one offeror's proposal. Third, and most important, the problems of technical leveling and technical transfusion can be resolved through careful conduct of the negotiations. In addition, the four-step method is undesirable because it limits final discussions to a single offeror, thus eliminating an important tool of negotiations, competition.

Conventional negotiation method was considered since it would provide an early indication that the proposals were within the funding limitations. However, it appears potential offerors are already aware of the funding limitations and will bid accordingly. During discussions the firms have frequently cited the 40 million dollars figure and one potential offeror presented the contract negotiator with a copy of the FY 80 budget showing 12.7 million for NISTARS.

19.5 CONTRACT TYPE

It is anticipated that a Fixed Price Incentive (firm targets) contract will be negotiated with incentives applied to both cost and schedule (liquidated damages).

Under NISTARS there is a firm performance requirement, a reasonably high expectation of technical success and no need for extensive technical direction by the Government. However, for a firm entering the field, there is a substantial cost risk in the development of the software package and system integration. Past procurement history indicates that this cost risk has been a factor which has limited competition. It is hoped that by using a FPI contract type the cost risks will be reduced and additional firms will submit proposals.

An FFP contract was also considered since the three previous related contracts were negotiated on a FFP basis with CBSI. However, the decision to use FPI was based on the inherent system risk as opposed to the probable risk for a single contractor. For a new contractor the integration process and development of the software package represent substantial cost risks. On the other hand, for CBSI, who has acted as a system integrator and has developed similar software packages, the cost risk is considerably reduced. In order to attract competition, the procurement package must be oriented toward the general condition and not the specific case of CBSI. However, the final selection of contract type will be based on the logic of the individual situation. Thus, during negotiations, the cost data, offerors' experience, and technical risk will be evaluated to determine the feasibility of negotiating a FFP type contract.

In addition to cost, incentives will be applied to the schedule on a liquidated damages basis. Since the primary motivation for implementing the NISTARS concept is personnel savings, a delay in implementation will postpone the personnel reductions and prove very costly. Although obviously the cost savings will vary depending on attrition, the loss caused by delay averages approximately $3,000 per day.

Although early implementation would also equate to a manpower savings a reward incentive will not be included for the following reasons:

a. Generally the relationship between schedule incentive and cost incentives would be inverse. Since the personnel savings is an imprecise figure, it would be difficult to assure that schedule savings would not be outweighed by cost increases.

b. The Government will require almost six months after installation to load the system. Thus, even if the contractor could deliver early, acceptance testing could not take place.

An incentive will not be applied to performance since the specified throughput represents the upper range of performance attainable by the contractor without a significant technological breakthrough. The upper range is limited by manual labor standards for receipts, issues and packs. Without the development of a completely new approach in material handling, the required throughput cannot be substantially increased because the warehouse personnel cannot receive, issue and pack any faster.

19.6 NEGOTIATION AUTHORITY

The proposed contract will be negotiated under the authority of 10 USC 2304(a)(10) as implemented by ASPR 3-210.2(xiii), since it is not possible to draft adequate design specifications. It is possible to describe the performance standards but it is not feasible to describe the software package and the interrelationship of hardware and software in sufficient detail to permit advertising. In addition, the goal is to obtain an optimum, not a minimum system. The negotiation process will permit the evaluation of various methods and approaches to the NISTARS system and thereby maximize competition and allow for trade-offs to secure an optimum system.

19.7 REPROCUREMENT DATA

Reprocurement data is not required for the material handling equipment since the Government already has sufficient data to reprocure these items on a competitive basis. The process controller is a commercial item developed at private expense.

The essential element for reprocurement would be unrestricted rights to the data for the software package. However, the following factors should be weighed before the decision is made to purchase the data with unrestricted rights:

a. Cost. Current estimates for unrestricted data rights are three to four million dollars.

b. Need for reprocurement data. It is anticipated that the NISTARS software package will provide a "universal shopping list" with potential applicability to other Naval and DOD activities. However, this assumes that the system will be configured around a variety of types of MHE and that other activities will be able to select applicable portions of the software package for their own use. Should a new and/or really unique approach be offered the data might not be divisible into "shopping items" that will be particularly useful for follow-on procurements.

Also it is obvious there is no need for the reprocurement data unless there is a known requirement to expand the NISTARS concept to other activities. The expansion could take one of two forms: discrete automated material handling systems or the integration of NISTARS sites with each other and other inventory control and automated material handling systems. In the former case it would be possible to compete again on a total system basis. However, in the latter case, restricted data rights would compel the Government to negotiate on a sole-source basis with the NISTARS contractor for integration services.

c. Usefulness of data. Even with unlimited data rights, the question remains of the stand-alone value of the software. The software package is only one element of a sophisticated integrated system. The Government would also require the expertise to maintain it and use it in an integrated process-controlled operation. If that expertise does not reside in the Government or cannot be developed economically the software's value is limited.

Since for the most part the above information will only be available late in the procurement process, the decision to buy an unrestricted software data package must be deferred until all the information can be analyzed. To facilitate the purchase of the data rights, if that is the final decision, the predetermination of-rights-in-technical-data procedure will be followed.

19.8 OTHER CONSIDERATIONS

19.8.1 Small Business, Labor Surplus Area Concerns, Minority Business

The Small Business Specialist will be consulted in establishing the bidders list. However, based on past procurement history there is no expectation of receiving a sufficient number of offerors from small business or labor surplus area concerns to warrant a set-aside. The size of the procurement and financial risk involved preclude consideration under the 8(a) program.

19.8.2 Synopsis

Although the length of the bid list precludes listing the firms in the Commerce Business Daily, the procurement will be synopsized and the firm names supplied to potential subcontractors upon request.

19.8.3 DAR Deviation

As indicated above, it is anticipated that the procurement will be awarded on a multi-year basis. Multi-year shares with the option concept the advantages of standardization, reduced costs and increased competition, however, multi-year more effectively promotes these goals.

Because of the high cost involved in the development of the software package and because only one contractor is known to have developed a related package, the competitive base is severely limited. By allowing firms to amortize the software development costs over three systems, their prices should be more competitive. Under a contract with options for the second and third sites, the contractors would either have to "front load" these costs or gamble that the Government would exercise the options.

It is possible that the savings would be greater under a multi-year since it is a common practice in industry to allow the same or similar trade discounts if the only contingency for the additional quantities is the availability of funds. This is an example of industry's perception that multi-year procurement is a more firm commitment to procure all three systems. Under a contract with options, a number of factors in addition to funds availability may dictate whether or not the options are exercised.

The one obstacle to use of the multi-year procedure is the DAR requirement for identical unit prices. In accordance with DAR I-322.2(c)(iv), "the unit price of each item in the multi-year requirement shall be the same for all program years." Although the three NISTARS installations are essentially equal, differences in building configurations dictate different material handling equipment and, thus, probably different prices. To require the contractors to apply the identical unit-price concept would mean a distortion of the actual prices. The distortion would make it difficult to negotiate any changes to the contract or to settle any termination claim. On the other hand, it is possible to follow the basic concept of multi-year and amortize the non-recurring costs over the three sites. Therefore, in order to obtain the benefits of a multi-year procedure while providing for a logical price structure, a request for a waiver of DAR 1-322.2(c)(iv) will be submitted. The cancellation ceiling will not exceed the $5 million limitation specified in DAR 1-322.2(j)(iv).

19.9 ALTERNATIVE PROCUREMENT APPROACHES CONSIDERED

Since Clay Bernard Systems International is the only known firm who has developed a similar system, consideration was given to various forms of sole-source procurements with CBSI:

a. A sole-source procurement for three turnkey systems; and

b. A competitive hardware procurement and a sole-source procurement of software and integration services from CBSI.

The first alternative was rejected since there is no justification for buying the MHE from CBSI. CBSI has only a limited manufacturing capability and on prior procurements has subcontracted for the material handling equipment and process controllers. These hardware items are standard commercial items for which there is a competitive market. Since these costs constitute 60 to 75% of the system costs and since there is sufficient data available to procure them competitively, even if some type of sole-source procurement were warranted, it would be reasonable to break out the hardware items.

The second alternative would have required substantially more in-house resources and would have increased the program risk. However, the primary reason that the alternative was rejected was because the sole-source rationale was weak. Although CBSI has been prominant in the development of integrated process controlled warehousing systems, and has ultimately been the only offeror on two of the three prior procurements, the knowledge and technology is available to other firms. However, these other firms must be willing to assume cost risks to develop competing systems.

APPENDIX B

NAVSUP NOTICE 4110 "COPY"

DEPARTMENT OF THE NAVY
Naval Supply Systems Command
Washington, D.C. 20376

21 SEP 1978

NAVSUP NOTICE 4110

Subj: Integrated Warehousing Systems at Naval Supply Centers

Encl: (1) Integrated Warehousing Systems Group (IWSG), SUP 032N, Charter and Staffing
(2) Integrated Warehousing Systems Organizational Relationships

1. Purpose. To establish the organizational structure and resource capability to plan for and implement state-of-the-art, process controlled material management systems and complementary automated materials handling systems at the Naval Supply Centers.

2. Background. During the past two years increased emphasis has been placed on the study of warehouse automation and mechanization as a means of continuing responsive supply support in the face of dwindling resources. Interest and study of available systems were intensified in late 1977 as state-of-the-art warehouse mechanization installed by the Air Force and planned by the Defense Logistics Agency were reviewed. As a result a decision was made to proceed with developmental plans for these type systems for installation at NAVSUP stock points. In order to properly manage this major undertaking, it is necessary to establish a special Headquarters group and project team to plan, develop, coordinate, and implement the Integrated Warehousing Systems Project at Naval Supply Centers in the 1980-1981 time frame.

3. Objective. To provide a modern, state-of-the-art, process-controlled material management system and a complementary automated materials handling system that is responsive to the support requirements of the Navy. This integrated warehousing system will provide total warehouse control of all material stored in both the mechanized and non-mechanized storage areas. Control over receiving, storage, issuing, packing, and related service functions such as stock maintenance actions, inventory, work scheduling, and reporting will be required by this integrated warehousing system. The automated materials handling system will utilize a variety of equipment, i.e., mobile vehicles, conveyors, storage units, and associated

automated equipment, to receive, store, package and transport materials. Major considerations that must be satisfied within this objective are:

a. To identify future NSC peacetime and mobilization operational support and wholesale depot requirements for automated materials handling systems.

b. To identify future pressures which will govern the environment and specify assumptions.

c. To determine specifications against which contractors will bid for the warehousing system.

d. To examine alternatives available to provide integrated warehousing system.

e. To recommend selection of system appropriate for each NSC.

f. To identify proper interface with existing and planned UADPS-SP related systems improvements, such as:

(1) Assurance of complete interaction with the Navy Automated Transportation Documentation System (NAVADS) project to provide a close relationship between receiving, shipping, storage, and transportation functions at the NSCs.

g. To assure that implementation of the integrated warehousing system is effected in a timely manner, in conformance with available MILCON and OPN funding.

h. To perform as the functional manager for integrated warehousing systems and coordinate/interface with project offices at NSCs for these type systems.

4. Project Organization. The following organization is established effective 1 October 1978:

The Integrated Warehousing Systems Group (IWSG), SUP 032N, in accordance with the staffing plan and charter of enclosure (1).

5. Policy. The success of this project will depend heavily on top management attention and support by selected NAVSUPSYSCOM managed activities. Virtually all aspects of supply support Navy-wide will be affected. The systems installed as a result of this effort will be a material handling and material

management capability to meet the supply support demands of the future. It is therefore the policy of this Headquarters that this effort be completely and fully supported. This includes the cooperation and support of each of the participants to ensure an orderly, cost effective, transition from the present to the future in an environment of minimum disruption to current support operations.

6. Action

a. Establish and staff the organizational entity set forth herein on the date indicated.

b. Commence performance of assigned tasks to be completed within designated time frames.

c. Monitor project task assignments, exchange information, submit periodic project progress reports, and modify planning guidance and/or project direction as approved.

/s/E. A. Grinstead
E. A. GRINSTEAD

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INTEGRATED WAREHOUSING SYSTEMS GROUP (IWSG), SUP 032N

CHARTER AND STAFFING

1. Title. Integrated Warehousing Systems Group (IWSG), SUP 032N.

2. Task Description. The IWSG (SUP 032N) will be responsible for coordinating Headquarters integrated warehousing system planning, developing and implementing actions in support of the project objectives. All requests for data, clarification of guidance/policy or perspective in any given discipline will be channeled via SUP 032N. SUP 032N will be responsible for directing action to the proper Headquarters code, coordinating and monitoring response action, and documenting and providing official responses.

3. Scope. The IWSG will have the broadest scope possible within Headquarters; to acquire data, policy and plans as needed to support the group effort. SUP 032N will maintain copies of plans, progress and schedules; monitor funding; sponsor Headquarters expenditures; coordinate and assure compliance/response to project officer tasking; and, report any problems/delays.

4. Authority. The authority of SUP 032N is obtained from the Deputy Commander, Fleet Support and Supply Operations as directed through established channels. Workload assignments/conflicts will be negotiated by SUP 032N and the affected group members designated to represent NAVSUP Deputy Commanders. Conflicts will be raised to succeeding command channel levels.

5. Organizational Relationships. SUP 032N functions as a permanent staff within the SUP 032 division. The matrix staff performs its normally assigned function within its own organizational entity until called upon by SUP 032N. Once tasked, members of the matrix staff will be responsible directly to SUP 032N for completion of tasking. Every effort will be made to preclude disruption of ongoing work by establishment of reasonable time frames for response. Deputy Commanders will make every effort to provide personnel support to meet tasking assignments. Such tasking will be afforded priority within organizational codes except for the exceptions authorized by SUP 09/00.

6. Staffing. The Integrated Warehousing Systems Group (IWSG) will be staffed as follows:

a. Permanent Staff

Group Leader	SUP 032N
Computer Systems Analyst	SUP 032N1
Program Analyst	SUP 032N2
Secretary	SUP 032NS

b. Matrix Staff

Storage Specialist	SUP 0321
Material Equipment & Systems Specialist	SUP 0322
Physical Distribution Specialist	FMSO 953
Program/Budget Analyst	SUP 012
Facilities Engineer	SUP 0324
Supply Systems Analyst	SUP 0421
Supply Systems Analyst	SUP 0414
Transportation Specialist	SUP 052
Computer Systems Specialist	FMSO 94
Systems Accountant	SUP 044
Storage Specialist	Each NSC

7. Project Transition and Disestablishment. It is anticipated that the SUP 032N organization will be retained during the life of the project and up to one year after implementation at the last NSC. Most of the matrix organization will be retained up to that point in time. Six months after implementation at the first NSC, the organizational alignment and requirements will be reviewed.

APPENDIX C

SOURCE SELECTION PLAN

"COPY"

1.0 PURPOSE.

This plan describes the organization which will be structured to conduct the source selection process. The responsibilities, functions, duties and basic structural relationships are defined herein. The designation of the membership of the SSEB and Category Leaders will be accomplished separately.

2.0 DESIGNATION OF SOURCE SELECTION PERSONNEL.

2.1 SOURCE SELECTION AUTHORITY (SSA).

Rear Admiral V.T. EDSALL, SC, USN

2.2 PROCURING CONTRACTING OFFICER (PCO).

Commander David M. CHISM, SC, USN (Regional Contracting Department, NSC Oakland)

2.3 SOURCE SELECTION ADVISORY COUNCIL (SSAC). The chairman and members of the SSAC have been designated by the Source Selection Authority and are as follows:

Chairman:	Captain M.W. VAN VALKENBURG, SC, USN
Member:	Captain B. AVILES-ALFARO, JR, SC, USN
Member:	Captain R.O. HURT, SC, USN
Member:	
Legal Advisor:	Mr. R.A. VAN BROEKHOVEN

2.4 SOURCE SELECTION EVALUATION BOARD (SSEB).

a. The Chairman SSAC has designated Captain O.R. HINKLE, SC, USN as the Chairman of the Source Selection Evaluation Board.

b. Members of the SSEB will be designated by the Chairman, SSAC.

c. Each SSEB member will be a Category Leader as assigned by the Chairman SSEB with the approval of the Chairman SSAC.

3.0 DUTIES AND RESPONSIBILITIES.

3.1 DUTIES AND RESPONSIBILITIES OF THE SOURCE SELECTION AUTHORITY (SSA).

a. Ensure that the entire source selection process, encompassing proposal solicitation, evaluation, selection and contract award, is properly and efficiently conducted.

b. Ensure that equitable and effective actions are taken, consistent with the Defense Acquisition Regulation (DAR), to attain a manageable but competitive number of final proposals for the selection process.

c. Appoint the chairman and membership of the Source Selection Advisory Council (SSAC).

d. Ensure that an evaluation group structure, with a minimum number of members compatible with the solicitation requirements, is established and employed.

e. Approve the Source Selection Plan (SSP) and ensure that the proposed program approach is compatible with the requirements of the Navy Integrated Storage Tracking and Retrieval System (NISTARS) requirements.

f. Ensure that cost is appropriately considered as an integral element of proposal evaluation, together with technical approach and management capability, in accordance with the relative order of importance of the evaluation factors and selection criteria.

g. Provide SSAC and/or Source Selection Evaluation Board (SSEB) with appropriate guidance and special instructions as may be necessary for the conduct of the evaluation and selection process.

h. Approve weighting factors and competitive range determinations.

i. Be the sole authority to authorize release of source selection data and information.

j. Make the decision as to the source after an in-depth review and consideration of all information and data available from the SSAC and the Source Selection Evaluation Board (SSEB).

k. Approve the execution of the contracts, including contract definition contracts and the operation and maintenance augmentation contract if awarded by the U.S. Government.

3.2 DUTIES AND RESPONSIBILITIES OF THE PROCURING CONTRACTING OFFICER (PCO).

a. Serve as a staff advisor to the Source Selection Authority (SSA), Source Selection Advisory Council (SSAC) and Source Selection Evaluation Board (SSEB).

b. Assist in the preparation of the Source Selection Plan (SSP).

c. Assure that the source selection criteria set forth in the Source Selection Plan (SSP) approved by the Source Selection Authority (SSA) are properly addressed in the solicitation document.

d. Assure that all aspects of the contract definition solicitations are clearly and properly addressed.

e. Assure that proposals are requested on a basis which permits verification of the cost data.

f. Determine responsibility of offerors within the meaning of the DAR.

g. Conduct negotiations in accordance with the requirements of DAR 3-805.

h. Concur in the final decision for award after an in-depth review and consideration of all information available from the SSA, SSAC, and SSEB.

i. Prepare the contract award documents and obtain the necessary business clearance approvals.

j. Request and direct necessary audits and Cost Analyses.

3.3 DUTIES AND RESPONSIBILITIES OF THE SOURCE SELECTION ADVISORY COUNCIL (SSAC).

a. Review and approve the Source Selection Plan prior to its submission to the Source Selection Authority (SSA) for final approval.

b. Develop the criteria for evaluation and selection in a relative order of importance and establish the numerical weighting system. Weights will be disclosed only to the PCO.

c. Make competitive range recommendations to SSA.

d. Provide the Source Selection Evaluation Board (SSEB) with appropriate guidance and special instructions as may be necessary for the conduct of the evaluation process.

e. Appoint the chairman and membership of the Source Selection Evaluation Board (responsibility of SSAC chairman).

f. Receive such briefings, confirmations, reports of pre-award surveys, audits, etc., as may be necessary throughout the source selection process.

g. Review and consider the source selection evaluation report prepared by the SSEB. Apply category weight factors to the SSEB report.

h. Prepare a proposal analyses report for submission to the SSA.

i. Make a source selection recommendation to the SSA unless otherwise directed by the SSA.

j. Document for the SSA's signature, the justification for the source selection decision.

3.4 DUTIES AND RESPONSIBILITIES OF THE SOURCE SELECTION EVALUATION BOARD (SSEB).

3.4.1 CHAIRMAN OF THE SSEB. The Chairman of the SSEB will:

a. Promptly, upon receipt of offerors' proposals, convene an Evaluation Board to evaluate those proposals in accordance with the Source Selection Plan.

b. Assure that members of the SSEB are qualified for the tasks assigned and are properly briefed as to the extent of their duties and responsibilities.

c. Obtain a suitable, dedicated space for conduct of the evaluation.

d. Establish administrative procedures, in conjunction with the Contracting Officer,- to safeguard the integrity of the selection process.

e. Recommend to the SSA the personnel for appointment to the Pre-Award Survey (PAS) Team; the offeror(s) to be surveyed; and the proposed date of the Survey at least one week prior to commencement of the on-site survey(s). The objective of

PAS is to validate proposal data submitted by offerors and to evaluate technical capability and responsibility.

f. Submit clarification/deficiency questions to Contracting Officer.

g. Submit evaluation reports to SSAC.

h. Provide such briefings and consultations concerning their evaluation as may be required by the Source Selection Authority (SSA) or Source Selection Advisory Council (SSAC).

i. Promptly advise the SSA of any significant delays in the evaluation process.

3.4.2 SOURCE SELECTION EVALUATION BOARD (SSEB)

The SSEB will:

a. Review and consolidate questions from category leaders concerning technical, and management clarification in offerors' proposals.

b. Perform proposal scoring.

c. Ensure timely inputs from Evaluation Team members.

d. Prepare a source selection evaluation report which clearly and concisely describes the findings of the proposal evaluation, including the strengths, weaknesses and risks associated with each competitor's proposal.

e. Perform the function of the category leaders and evaluators for the NISTARS source selection.

3.4.3 SOURCE SELECTION EVALUATION BOARD (SSEB) CATEGORY LEADERS. The category leaders will:

a. Review category evaluation sheets, narratives and remarks for completeness and accuracy.

b. Establish category raw scores.

c. Prepare category raw score and narrative reports.

d. Brief, coordinate, and supervise personnel assigned to their category.

e. Brief the SSEB Chairman as required.

3.4.4 CATEGORY EVALUATORS. Individual evaluators will:

a. Evaluate the proposals as submitted by potential contractors against the requirements established in the Request for Proposals and the proposal evaluation/selection criteria approved by the SSA.

b. Prepare evaluation sheets.

5.0 ADMINISTRATION, SECURITY, AND RULES OF CONDUCT

5.1 ADMINISTRATIVE SUPPORT.

5.1.1 GENERAL. Administrative support and services for the NISTARS Program will be provided by the Naval Supply Systems Command (NAVSUP). These include military and civilian personnel administration, space allocations, office services, office equipment, financial accounting services, security, graphic arts, and communications.

5.1.2 PHYSICAL RESOURCES. The NISTARS Project Office will provide a secure central work and storage area for the evaluation process. Details of the space arrangement will be made available to the Source Selection Organization when the information becomes available.

5.1.3 ADMINISTRATIVE OFFICE. The NISTARS Project Office will also arrange for all administrative functions relating to proposal evaluation. These responsibilities include Security.

5.1.4 WORKING HOURS. Normal working hours of Evaluation Team members will be 0730 to 1600 Monday through Friday.

5.1.5 LEAVE. Rigid schedules have been established in order to accomplish complete and timely Source Selections. Accordingly, the use of leave other than for emergencies by all personnel participating in the Source Selection will be strongly discouraged during the evaluation process.

Sickness and other reasons for absence of personnel assigned to the Source Selection evaluation will be reported by the individual to the Chairman, SSEB not later than 1100 on the first day of the absence, stating the circumstances

and estimated duration. Timely notification is mandatory in order to inform the category leader and the purposes of record and timekeeping.

5.1.6 INCOMING TELEPHONE CALLS. Evaluation team members will not be called to the telephone except in emergency. Incoming calls will be received by the clerical staff and a message will be given to the individual involved to return the call at his convenience.

5.2 SECURITY REGULATIONS

5.2.1 GENERAL. The source selection process demands absolute security throughout the entire proceedings, including the actions of all personnel associated with the evaluation of proposals, deliberations of the various boards, and presentations to higher authority. Inadvertent disclosures can be very damaging to the Navy, both in terms of criticism resulting from failure to conduct business affairs properly, and the loss of the competitive environment.

Each individual shall be familiar with the security precautions contained within this plan as well as those precautions set forth below. Handling of all source selection documentation shall be in strict accordance with the following:

- Defense Acquisition Regulations (DAR), paragraphs 1-113, 1-329, 1-1006, 3-507, and 3-805.3.
- SECNAV Instruction 5371.3.
- OPNAV Instruction 5510.1.

5.2.2 PHYSICAL RESOURCES. The Source Selection evaluators will accomplish their assigned tasks in a secure central work area with controlled access. The Proposal Stowage area will be protected and posted with appropriate signs. If the room(s) or building is so situated as to require armed guards for access control, this force will be administered by the Security Officer.

Provisions will be made for the stowage of material during the evaluation. The contractors' proposals are privileged and adequate security safeguards will be maintained. Daily security checks will be made to insure that security requirements and instructions are being followed.

All working papers, rough drafts, computation sheets, carbon copies and stenographic notes relating to documents which are not required for retention in the official Source Selection files will be placed in burn bags for immediate destruction. The material will be handled for destruction on the same basis as that prescribed for classified waste under existing instructions. Burn bags will be stored in proper security containers at the end of each working day. The Security Officer will make arrangements for daily pick-up of burn bags.

No documents will be removed from the evaluation areas for any purposes without specific authorization from the Chairman of the SSEB. At the conclusion of the Source Selection Evaluation, members of the Evaluation Team will not be permitted to retain any work papers, or any part of the proposals received.

5.2.3 UNAUTHORIZED DISCLOSURE. If at any time during the evaluation process it should be found that there has been unauthorized disclosure or release of either confidential

business information or privileged information, the matter will be brought to the attention of the Chairman of the SSEB, and a full investigation shall be conducted by appropriate Security authorities. The results of this investigation will be made known to the Chairman of the SSEB as soon as possible for appropriate corrective measures.

5.2.4 SECURITY OFFICER. In carrying out his responsibility the Security Officer will:

a. Formulate security procedures to be observed at the evaluation sites during and after working hours, and during emergencies.

b. Implement physical security programs for the handling, stowage, and protection of all material received at the evaluation sites.

c. Coordinate procedures for the handling of visitors.

d. Assure that all persons who are to handle classified, unclassified and privileged material are appropriately cleared.

e. Formulate and coordinate a security orientation program for the security procedures to be followed including the protection and handling of classified and privileged material.

f. Formulate and coordinate procedures for the destruction of classified and privileged material. The procedures will provide for an accurate record of destruction.

g. Report all actual or potential security violations at the evaluation sites to the Chairman of the SSEB.

h. Formulate and coordinate duties and responsibilities of the clerical personnel assigned watches as Receptionist.

i. Formulate and coordinate procedures for the manufacture and issuing of special identification badges for authorized Evaluation and Source Selection members (if required).

j. Provide arrangements for the pick-up of burn bags at the evaluation site.

5.2.5 PUBLICATIONS CUSTODIAN. In order that all classified, unclassified and privileged material received at the evaluation sites will be under direct control and accountability during the evaluation phase, a Publications Custodian and alternates will be designated as assistants to the Security Officer. Their responsibilities will be to:

a. Maintain a positive record of accountability of all proposal documents including sign in/sign out records.

b. Establish identification of each person requesting proposal documents and assure that each person is authorized access to the documents.

c. Do not permit access to the secure library area unless authorized by Chairman, SSEB.

d. Maintain positive control of evaluation documentation stowed in library.

e. Maintain custody of burn bags until collected for burning.

5.2.6 RECEPTIONIST. Receptionist Station(s) will be established at the evaluation site(s) to control access of personnel. Assignment of individuals to Receptionist Station(s) will be scheduled by the Security Officer. The general duties and responsibilities of the Receptionist are to:

a. Establish identification of each person entering and leaving the evaluation areas and permit access only to authorized personnel.

b. Control identification badges, including the issuance of the badge at the beginning of the working day and the accountability of all badges at the end of the normal working hours (if required).

c. Report any and all violations of procedures or any circumstances which may arise that are not covered by existing instructions to to Security Officer.

5.3 RULES OF CONDUCT.

The following rules of conduct will be scrupulously followed by all participants in the source selection.

Refer all attempted communications by contractors' repesentatives to the Procuring Contracting Officers.

Do not discuss any aspect of the source selection with anyone other than participating panel members.

Discussions with panel members concerning proposals shall be conducted only within the specific evaluation areas of concern. One should never assume that it is safe to speak of the source selection because one is among Government employees or is in Government buildings. The obligation not to discuss any aspect of the source selection does not end with the completion of the source selection activities. While all or part of the technical proposal content may be available for use within the Government at some later time, the source selection evaluation information remains privileged except as specifically approved for release by the SSEB.

Once the panels have been convened, contact with the contractors for additional information or clarification of the proposal shall be made only through the Contracting Officer or his designated representative.

No rules or regulations can cover all possible situations. Therefore, the evaluators shall use discretion, good judgment, and personal integrity in all undefined situations.

All members of the SSAC and SSEB will be required to execute a Certificate of Non-Disclosure (Appendix A) and Statement of Financial Interest (Appendix B) indicating that there is no known conflict of interests. The Certificates and Statements will be submitted to the SSA for evaluation in accordance with NAVMAT Instruction 5370.13 of June 1976 as follows:

(a) The SSAC members and the chairman of the SSEB shall forward to the SSA not later than 30 days after the first meeting of the SSAC.

(b) The SSEB members shall forward to the SSA not later than 15 days after appointment to the SSEB.

7.0 EVALUATION PROCEDURES.

7.1 Evaluation is accomplished by reviewing and analyzing each offeror's proposal, to determine what is offered, then comparing the offer to the evaluation critera. The evaluator must remember that he need not accept, without question, data presented in the proposal. He is expected to use his expert knowledge and experience to determine the feasibility, logic, and the reasonableness of the offeror's response. In some instances, he may want to verify certain aspects of the data that are outside his technical skill field. He may do this by discussion with advisors, consultants, or other SSEB members.

7.2 In order that an acceptable evaluation may be conducted, the evaluator must know: what he is to evaluate; what the solicitation/statement of work requires; and what is considered the minimum acceptable response. These data should be available in the factor descriptions and evaluation criteria which are provided to each evaluator. The evaluator should become familiar with that portion of the description and standards which pertain to his task. In addition, he should familiarize himself with the description and evaluation criteria of other related and/or interfacing factors and subfactors.

7.3 How an evaluator approaches the task of evaluation is up to his own judgment based on his experience. The method by which it is accomplished is dependent on what he feels best suits the particular circumstances. The only constraints placed upon him are those imposed by the overall evaluation schedule and the inputs he must furnish other evaluators. It is, however, important that all evaluators be consistent in their approach to evaluation. Failure to do so will result in distortion of the true value of the proposals.

7.4 The preparation of the evaluation analysis in narrative form is the most important aspect of the evaluation process.

a. In preparing the narrative which communicates the evaluator's findings to the SSAC, he must understand that his narrative will prove the most useful, and usually the only means available to the SSAC to inform the SSA what a company offered and how well it met the established standards.

b. It is not sufficient that the narrative states that something is good or inferior. The evaluator must indicate in the narrative what was offered; how it met the evaluation criteria, or how it failed to meet the minimum requirements; what, in the evaluator's opinion, must be done to remedy the deficiency; and what impact (including technical and cost risk) the deficiency correction will have on the overall acceptability of the offeror's proposal.

c. Clarity and brevity are the keys to successfully prepared narratives.

NAVAL INTEGRATED STORAGE, TRACKING
AND RETRIEVAL SYSTEM

SOURCE SELECTION EVALUATION BOARD

CERTIFICATE OF NON-DISCLOSURE

I have read, fully understand and will comply with the Rules of Conduct and Security Regulations contained in Section VIII of the Source Selection Plan for the NISTARS Project.

I understand my obligation not to divulge information received in confidence from contractors in connection with bids and proposals, trade secrets, inventions, discoveries, and reports of a financial, technical and scientific nature.

I further understand my responsibility not to disclose the methods or procedures being used by the SSAC or SSEB to evaluate contractors' proposals. I hereby affirm that I will not reveal, disclose, or release the standards, ratings or scores used by or any information concerning, the Source Selection evaluation process unless authorized to do so by the SSA.

_____
Member's Signature

_____ _____
Date Members' Activity

6.0 EVALUATION CRITERIA

6.1 SYSTEM MANPOWER REQUIREMENTS

The proposals will be evaluated for their staffing requirements with maximum credit given for least manning requirements and lesser credit given for higher proposed staffing. The specifications contain labor standards that shall be adhered to when calculating the manning levels for the specified functions. The system manpower requirements consist of operational and support personnel. The operational personnel are identified as warehouse functional types, i.e., receipt processing warehousemen, storage device operators, remote terminal operators, packers, etc. and process controller operators. The support personnel are identified as supervisors and maintenance staff (software and hardware, i.e., process controller, terminals, process controller peripherals, materials handling equipment, etc.). Assumptions: The system is assumed to operate one shift per day with the process controller staffed for three shifts to respond to high priority requirements. All preventative maintenance is to be performed during other than prime shift operations.

6.2 SYSTEM THROUGHPUT REQUIREMENTS

The proposals will be evaluated for their capability to meet the specified throughput requirements.

The system throughput requirements are defined in two distinct levels. The lowest or base level throughput requirement is based upon the current workload and must be attainable with the process controller; peripherals, and material handling equipment that is installed. The upgraded throughput requirement is based upon an increased workload and must be

Attainable without any change in the process controller software; however, the process controller, peripherals, and materials handling equipment may be augmented. Assumption: All throughput requirements are based upon a single shift operation.

Throughput Requirements

	Receipts	Issues	Consolidation
Base			
Peak/Hr.	650	2,500	2,500
Total/Day	3,000	15,000	15,000
Upgraded			
Peak/Hr.	1,000	4,200	4,200
Total/Day	5,000	25,000	25,000

6.2 SYSTEM CONTROL

The proposals will be evaluated for their capability to provide the specified systems control requirements or on the degree to which these requirements are met. Those systems control requirements that are under the latter evaluation method are material tracking, storage cube utilization, operating personnel/process controller interfaces, production control to effectively manage the system's resources (material handling equipment and operating personnel) and to level the workload to provide the required throughput, on-line training program, and types of management reports to provide supervisory personnel with useful and properly configured information.

6.4 SYSTEM AVAILABILITY

The process controller subsystem will be evaluated to determine if the hardware architecture and software design meet the specified requirement to provide a continuous, fully operational system unaffected by the failure of a single (remainder missing from original Source Selection Plan) either meeting or failing to meet this requirement. Likewise, the intelligent remote terminals and the material handling devices will be evaluated to determine if they meet the 95% reliability as specified. The process controller and associated intelligent remote terminals, controllers and communications media will be evaluated to determine if the proposed configuration can meet the maximum response time as specified.

6.5 SYSTEM MAINTENANCE

The proposals will be evaluated for their maintenance concepts and plans and their conformance to the specified requirements. The system shall be evaluated for the ease of maintenance, by using modularly designed components, and providing maximum interchangeability of components. The system maintenance capability will be evaluated for its availability of spare parts. This evaluation will provide maximum credit for the use of all standard, currently operational, equipment and will be decremented for the use of non-standard equipment for which historical spare parts information do not exist. The evaluation will also consider designated preventative maintenance intervals, specialized test equipment, and proposed spare parts inventory with maximum credit given for least amounts in these areas and minimum credit given for excessive requirements.

6.6 SYSTEM MANAGEMENT

The proposals will be evaluated to determine a prospective contractor's previous experience, present staff capabilities, and project management methodology for fulfilling the Navy's installation and operational requirements. Each prospective contractor's previous experience will be evaluated for competency in the design and implementation in the following categories: (a) integrated materials handling systems, (b) integrated systems and (c) materials handling systems. Each prospective contractor's present staff capability will be evaluated by reviewing the resumes of key individuals earmarked to participate in the project. As a minimum this review will include managers and senior project leaders for all functional departments involved in the NISTARS project. Each prospective contractor's project management methodology shall be evaluated for adequacy in providing continuous and effective reporting of project status to the government project manager.

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